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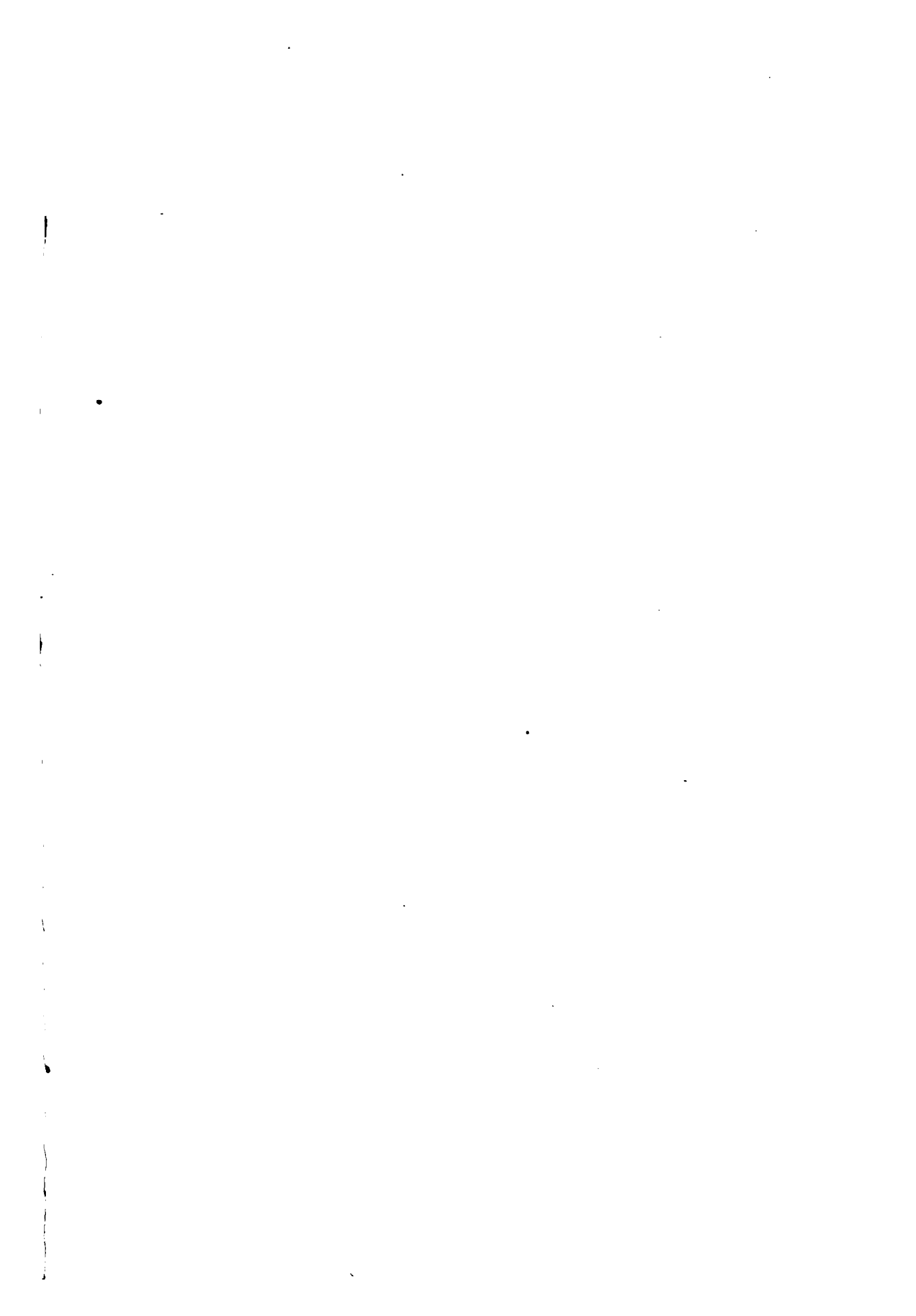
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ORIGINAL CONTRIBUTIONS

	PAGE
Diffuse Degeneration of the Spinal Cord, by James J. Putnam, with a Pathological Study of Five Cases by E. W. TaylorI and	74
Report of a Case of Brain Injury, with Peculiar Whistling Spells Following Operation, by Wm. C. Krauss.....	23
Brush Massage, by Frank R. Fry.....	24
A Case of Cortical Sclerosis, Hemiplegia and Epilepsy, with Au- topsy, by Chas. L. Dana.....	67
The Amelioration of Paralysis Agitans and Other Forms of Tremor by Systematic Exercises, by John Madison Tay- lor	133
A Case with the Symptoms of Cerebro-Spinal Meningitis, with Intense and General Alteration of the Nerve Cell Bodies, but with Little Evidence of Inflammation, by Wm. G. Spiller	140
A Case of Muscular Dystrophy, by Chas. Gilbert Chaddock.....	149
The Clinical Value of Astereognosis, and its Bearing upon Cere- bral Localization, by G. L. Walton and W. E. Paul.....	191
The Babinski Reflex, by C. Van Epps.....	214
A Study of the Cases of Tabes Dorsalis in Prof. M. Allen Starr's Clinic, Columbia University, from January, 1888, to Jan- uary, 1901, by Allan Blair Bonar.....	259
The Scapulo-Humeral Reflex of von Bechterew, by Wm. Pickett.....	273
Psychical Form of Epileptic Equivalent, by Chas. Cary and Jul- ius Ullman	280
Cases Illustrating the Differential Diagnosis of Cerebral and Hys- terical Hemianesthesia, by Chas. K. Mills and Theodore H. Weisenberg	285
A Case of Bullet Wound in the Spinal Cord; Operation Three Years Later, by Joseph Sailer	328
The Rationale of Subjective Healing, by Smith Baker.....	343
An Anomalous Case of Paralysis and Dystrophy of Muscles Prob- ably Dependent upon both Neural and Spinal Lesions (not Primary Neurotic Atrophy), by F. X. Dercum.....	355
Notes of a Remarkable Case of Insomnia and Its Treatment, by John E. Beebe.....	363
President's Address before the American Neurological Associa- tion, June, 1901.....	381
A Case of Simple Serous Cyst of the Cerebellum with Autopsy, by Geo. W. Jacoby	385
Binocular Hemianopsia and Optic Nerve Atrophy in a Case of Diabetes Mellitus, by Howard F. Hansell.....	398
Report of a Case of Melancholia Followed by Stupor Lasting Three Years and Eight Months; Recovery, by Cecil Mac Coy	404
A Case of Peroneal Muscular Atrophy (Type Charcot-Marie), by Chas. Gilbert Chaddock.....	408
A Case of Peripheral Pseudo-Tabes with Exaggerated Reflexes. Autopsy and Microscopical Examination Showing Degen- eration of the Peripheral Nerves and no Lesions of the Spinal Cord, by Chas. K. Mills.....	435

	PAGE
A Study of the Insanities of Adolescence, by Wm. Pickett.....	440
A Large Subcortical Tumor of the Occipital Lobe, Producing Right-sided Hemiparesis and Right Homonymous Hemi- anopsia, together with Wernicke's Pupillary Reaction Sign as a Distance Symptom, by F. X. Dercum.....	455
A Case of Astereognosis Resulting from Injury of the Brain in the Superior Parietal Region, by Wm. H. Teller and F. X. Dercum.....	499
A Clinical Classification of Insanity, by F. X. Dercum.....	499
Dislocation of the Seventh Cervical Vertebra; Clinical History of a Case; Remarks, by Frank R. Fry.....	515
Three Cases of Hereditary Chorea, by C. Eugene Riggs.....	519
Tumor of the Superior Worm of the Cerebellum Associated with Corpora Quadrigeminal Symptoms, by Hermon C. Gor- dinier	543
A Case of Progressive Unilateral Ascending Paralysis, Probably due to Multiple Sclerosis, by Chas. S. Potts.....	559
Separate Localization in the Cortex and Subcortex of the Cere- brum of the Representation of Movement and of Muscular and Cutaneous Sensibility, by Charles K. Mills.....	595
On Certain Studies with the Ergograph, by August Hoch.....	620
The Stadia of Mental Disease, by Theodore H. Kellogg.....	633
On Tumors Involving the Corpus Callosum, by James J. Putnam and Edward R. Williams	645

INDEX OF AUTHORS' NAMES

Figures in parentheses () indicate discussions. Figures with asterisk * indicate original articles, and are accompanied with title. Figures unaccentuated, accompanied with title, indicate abstracts; without title, book reviews.

PAGE	PAGE
Abadie, A. and Denoyes, J.—Essential Progressive Amyotrophy	115
Achard, C. and Leoper, M.—Gigantism, Acromegaly and Diabetes	173
Agostini, C.—Specific Weight of Grey and White Matter of Brain in Insane	485
Allen, A. R.—Unilateral Oculo-Motor Paralysis	168
Alt.—Psychical Deafness	46
Anton, G.—Unilateral Cerebellar Ataxia	246
Ardin-Deltiel, and Mairat, Toxicity of Sweat of Epileptics	426
Bahr, F.—Epilepsy and Accident	427
Bailey, P. (158).—Spinal Accessory Paralysis, 224, Paralysis of Spinal Accessory, 202, Prognosis of Traumatic Hysteria	638
Baker, S.—Rationale of Subjective Healing	*342
Barneff, B. V. and Cabannes.—Study of Congenital Ophthalmoplegia	422
Bardsky, L.—Putrefaction in Pathological Changes in Nerve Cells	482
Batten, F. E., Russell, R. and Collier, James. — Subacute Combined Degeneration of Spinal Cord	366
Bates, W. H.—Therapeutics of Suprarenal Extract	178
Beadles, J.—The Insane Jew	540
Bechterew, W. v.—Two Rare Forms of Facial Spasm	638
Beebe, J. E.—Remarkable Case of Insomnia and Treatment	*363
Behm.—Congenital Hernia Cerebri	20
Behr.—Observations on General Paresis	114
Berkley, Henry J.	56
Bernhardt.—Migraine and Epilepsy	176
Bertelsmann.—Cured Case of Otogenous Meningitis	636
Biggs, H. M.—Thyroid Extract in Mental Affections	121
Billchousky and Nartouski.—Action of Diphtheria Toxin on Nervous System	482
Boeri, and Simonelli.—Disturbance of Respiration in Hemiplegics	635
Bonar, A.—Tabes Dorsalis—Study of Cases	*259
Bondurant, E. D.—Acute Anterior Poliomyelitis	369
Bonhöffer, K.—Pathology of Delirium Tremens, 56; Disturbance of Consciousness in Epilepsy—Retention of Memory	316
Booth, J. A.—.....(293) (414)	
Bourneville.—Multiple Sclerosis	532
Bourneville and Chapotin.—Eosinate of Sodium in Treatment of Epilepsy	53
Bourneville and Poulard.—Sexual Life, Marriage and Posterity of Epileptic	534
Bramwell, E. and Campell, H.—Myasthenia Gravis	368
Brower, D. R.(420) (530)	
Brown, Charles Henry.—Death of	645
Brown, S.(530)	
Brunet, L.—Hereditary Epilepsy cured by an Attack of Hemiplegia	50
Bruns, L.—Progressive Spinal Muscular Atrophy	635
de Buck, D.—Nervous Changes in Carcinosis	588
Bullard, W. N.—Intracranial Pressure	237
Bulient, R.—Patellar Reflex in High Transverse Myelitis	636
Burgi.—Ambulatory Epilepsy	318
Burnet.—Epilepsy and Apoplexy	

	PAGE		PAGE
Burr, C. R.—Thyroid Gland and Menopause	51	Collins, J., 59; (106) (224) (226) (292) Case for Diagnosis 413; (414) (418) Abscess of Brain 466; (570); Progressive Muscular Atrophy and Tabes, 564; (613) (616)	
Burr, C. W.—(230), (468), (573), Stereognosis and Allied Conditions	579	Cotton, F. J.—Recurrent Luxation of Ulnar Nerve	371
Bury, J. S.—Influenza as it Effects the Nervous System, 43; Treatment of Arsenical Neuritis	585	Creighton.—Cutaneous Lesions with Neurotic Symptoms.....	291
Busquet.—Intermittent Nervous Symptoms of Malarial Origin	575	Crile, G. W.—Observation on Brain Surgery	234
Bussi, A.—Degenerative Epileptic Psychosis	238	Crocq, J.—Effects of Ligature of Cervico-dorsal Region of Spinal Cord in Animals.....	578
Cabannes, and Barneff, B. V.—Study of Congenital Ophthalmoplegia	422	Cullerre.—Prognosis of Psychoses of Puberty	483
Campbell, P. and Head, C.—Pathology of Herpes Zoster.....	428	Cushing, H.—Operation for Extirpation of Gasserian Ganglion	245
Campbell, H., and Bramwell, E.—Myasthenia Gravis	368	Czyhlarz, E. V. and Marburg, O.—Cerebral Bladder Disturbances	477
Cary, C. and Ullman, J.—Psychical Form of Epileptical Equivalent	*280	Dammer, F.—Tetany following Intoxication	313
Cassirer, Richard.	182	Dana, C. L.—Cortical Sclerosis, Hemiplegia and Epilepsy, with Autopsy *68; (103) (105) Acute Ataxia, 105; (107) (225) (291) (417) (568) (617)	
Ceni, C.—New Symptom in Epilepsy	175	Deaver, John B.	125
Cestan, M. R. and Guillain, G.—Hereditary Spasmodic Paraplegia and Hereditary Disseminated Sclerosis	639	Defendorf, A. B.—Periodical Psychoses	27 (32)
Cattell, J. M. McK.—Relations of Time and Space in Vision.....	179	Deiters.—Psychosis in Typhoid Fever	249
Chaddock, C. G.—Muscular Dystrophy, *149; Peroneal Muscular Atrophy	*408	Dejerine, J.	252
Chapotin and Bourneville.—Eosinate of Sodium in Treatment of Epilepsy	53	Dejerine, J. and Thomas, A.—Olivary-Ponto-Cerebellar Atrophy	116
Chipault.—Generalization of Epileptiform Crises	235	Denoyes, J. and Abadie, A.—Essential Progressive Amyotrophy	115
Church, A.—Bromide Treatment of Opium Habit 244; Superior Polioencephalitis	303	Dercum, F. X. (34) (155) Myopathy, 165 (168) (230) (301); Paralysis and Dystrophy of Muscles, *355; Subcortical Tumor of Occipital Lobe, *455 (468); Clinical Classification of Insanity, *489 (525) (527) (570)	(573)
Clark, L. Pierce.....(29) (32)		Dercum, F. X. and Teller, Wm. H.—Astereognosis Resulting from Brain Injury	*459
Clark, L. Pierce and Prout, T. P.—Status Epilepticus; Nature and Pathology	29	Devauux, A. and Dupre, E.—Trophic Tabes	113
Clevenger, S. V.—Chloralamid.....	245	Devl.—Cause of Migraine	176
Cohn, M.—Significance of Toe-Reflexes	46	Diller, T.	(569) (612)
Cohn, S. S.—Thymus Extract in Vasomotor Affections	120		
Collier, J., Batten, F. E. and Russell, R.—Subacute Combined Degeneration of Spinal Cord	366		

INDEX

v

	PAGE		PAGE
Dupre, E. and Devaux, A.—Trophic Tabes	112	Fürstner.—Treatment of Epilepsy	242
Dyer, E. E.—Cases of Brain Injury	239	Gallois, M. P.—Neuron Theory of Hysteria and Treatment by Janet Method	532
Ellis, Havelock	251	Geier, F. and Soukanhoff, Serge. Pathological Anatomy and Histopathology of General Paralysis	122
Englehardt, A.—Optical Neuritis in Chlorosis	311	Gessler, H.—New Treatment of Thomsen's Disease	55
Epps, C. van.—Babinski Reflex* ..	214	Gibson.—Notes on Cremasteric Reflex in Sciatica	577
Erb.—Early Diagnosis of Tabes ..	113	Giese, O.—New Form of Hereditary Nervous Disease	42
Eshner, A. A. (36) (164) (572)		Gigli, L.—New Craniectomy Instruments	535
Eulenberg, A.—Gonorrheal Nervous Diseases	636	Gilles de la Tourette.—Chorea and Gravid Chorea	578
Fauquet, Sabrazes. — Hitherto Unnoted Complication of Tabes	113	Gonzales and Rossi.—Epilepsy and Myoclonus—Autopsy	425
Fayolle and Lannois.—Bony Hypertrophy in Infantile Hemiplegia with Athetosis-chorea ..	584	Gordon, Alfred	(526) (574)
Fehrer, P.—Tabes in Women ..	578	Gordinier, H. C.—Tumor of Superior Worm of Cerebellum Associated with Corpus Quadrigeminal Symptoms	*543
Fere, C.—Hysteria and Exophthalmic Goiter	173	Gothard, and Riche de Monseaux.—Parasitic Cysts of Brain Caused by Taenia Echinococcus	579
Fernet, Chl.—Alcohol and the Death Rates	51	Gould, George M.	591
Ferrannini, L. — Histological Changes in Central Nervous System in Tetany of Stomach ..	481	Goveos.—Recovery from Epilepsy and Idiocy	238
Fisher, E.D., (154), (224), (292), Fracture Dislocation of Spinal Cord	465	Granger, W. D.	(28)
Flatau, G.—Diagnostic Value of Graefe's Symptom and Its Explanation, 49; Myelitis Apoplectica	313	Gray, Landon Carter.—Death of	542
Flexner, S.	(36)	Grenet, H.—Clinical Forms of Paralysis of Brachial Plexus ..	170
Fraenkel, J.—Mechanical Muscular Irritability and Tendon Reflexes in Tabes Dorsalis, 51; Case for Diagnosis, 102, (107), (226), (414); Tumor of Optic Thalamus, 464,	(466)	Grober.—Efficiency of Spinal Puncture in Chronic Hydrocephalus	45
Fragstein, V.—Trigeminal Disease as Initial Symptom of Tabes	582	Guillain, G. and Cestan, M. R.—Hereditary Spasmodic Paraplegia and Hereditary Disseminated Sclerosis	639
Franca, C.—Histological Diagnosis of Hydrophobia	310	Guiteras, R.—Notes on Use of Mercuriol	55
Frank, D.—Symptomatology of Paralysis Agitans	477	Gumprecht, F. — Dangers of Lumbar Puncture	50
Frisier, J. W.—Bromipin	178	Habermaas.—Progress on Epilepsy	586
Froehn, and Hoppe.—Thyroid Feeding in Epilepsy	240	Hammond, Graeme M.—(413), (418); Localization of Naming Center	576
Frolich, T.—Etiology of Chorea Minor	533, 577	Hansell, H. F.—Binocular Hemianopsia and Optic Nerve Atrophy in Diabetes Mellitus	*398
Fry, Frank R.—Brush Massage, *24; Dislocation of Seventh Cervical Vertebra	*515	Hare, H. A. (36), (232), (573)	
Fuchs, A.—100 Observations on Hemiplegia and Diplegia in Infantile Cerebral Paralysis ..	45		

	PAGE		PAGE
Hartman, F.—Disease of Sacro-lumbar Plexus, 423; Clinical and Anatomico - pathological Investigations on Traumatic Spinal Cord Affections	424	Koenig, W.—Dysarthric Form of Motor Aphasia	52
Head, C. and Campbell, P.—Pathology of Herpes Zoster...	428	Kohane, M.—Erythromelalgia...	175
Heitz and Seglas.—Treatment of Epilepsy by Flechsig's Method	54	Kollarits, J.—Acute Bulbar Paralysis	584
Herter, C. A.—Analysis of Symptoms Observed in Tuberculous Meningitis	159, (160)	Kolle.—Effect of Alcohol on Epileptics and Feeble-Minded...	310
Hoch, A.—Certain Studies with the Ergograph	*620, (628)	Koppen, M.—Traumatic Diseases of Brain	480
Hoeflmayr, L.—Origin of Neurasthenia, 42; Subjective Symptoms of Neurasthenia.....	311	Korsakow, S. S.—Treatment of Acute Insanities in Bed.....	484
Hoffmann, J.—Hereditary Muscular Atrophy	312	Kothe.—Treatment of Epilepsy.	241
Holmes, B.—Complicated Neuralgia and Nerve Lesions....	475	Krauss, Wm. C.—Brain Injury, with Peculiar Whistling Spells following Operation	*22
Hoppe and Froehn.—Thyroid Feeding in Epilepsy.....	240	Kreuser.—Late Recoveries in Insanity	315
Hinsdale, Guy.—.....	(168)	Kuh, Sidney.—Acromegaly Treated with Pituitary Body.	419
Hudovernig, C.—Bulbar Chronic Superior Paralysis	117	Ladame, C.—Phenomena of Chromatolysis	314
Hutchinson, Robert	591	Laehr, Heinrich	124
Hughes, Daniel E.	(229)	Lamboth.—Trephining for Traumatic Epilepsy	54
Hughes, Henry	253	Lamprasi.—Hemi - Craniectomy for Epilepsy	54
Ireland, Wm. W.—126; Study in Mental Pathology	249	Landenheimer.—New Remedies and Method in Treatment of Epilepsy	243
Jacobi, Mary Putnam.—Moral Treatment of Hysteria	522	Langdon, F. W.	(100) (610)
Jacoby, G. W.—Simple Serous Cyst of Cerebellum, with Autopsy	*385, (567)	Lannois, A.—Bony Hypertrophy in Infantile Hemiplegia.....	422
Janeway, T. C.	(159)	Lannois, and Fayolle.—Bony Hypertrophy in Infantile Hemiplegia with Athetosis-Chorea.	584
Jahrmarker.—General Paresis in Women	420	Lapinsky, M.—Acute Ischemic Paralysis	115
Jelliffe, S. E.	(106) (418)	Leoper, M. and Achard, C.—Gigantism, Acromegaly and Diabetes	173
Joukowsky.—Pathological Anatomy of Hemianopsia of Intra-Cerebral Origin	478	Leszynsky, Wm. M.—(29), (32), Spasmodic Torticollis and Treatment, 103, (155), Therapy of Pituitary Body Extract, 120; Terminal Condition in Deplegia, 154, (293), (413), (417); Recurrent Oculomotor Palsy, 462, (466); Nervous System and Coffee	534
Karplus, J. P.—Disturbances in Cutaneous Sensibility in Parkinson's Disease	174	Leubuscher, G.—Knowledge and Treatment of Epilepsy.....	54
Kellner.—Cranial Measurement of Idiots	374	Lewinsky.—Infantile Eclampsia and Epilepsy	309
Kellogg, T. H.—Stadia of Mental Disease	*620	Little, M.—Infantile Paralysis..	370
Keen, W. W.—(296); Musculo-Spiral Paralysis from Fractured Humerus	370	Lloyd, J. H.—(36); Bell's Palsy,	37, (513), (573), (612)
Kirchner.—Little Known Pupillary Reaction	237		
Knapp, P. C.—(512), (565), (569),	(608)		

	PAGE		PAGE
Lodor.—Study in Hematology of Neurasthenia	305	McCarthy, D. J.—(38), (41), (165); Multiple Neuritis, 167, (168), (169), (527), (572)	
Long, E. and Wiki, B.—Atrophic State of Spinal Cord in Chronic Spinal Syphilis	575	McCosh, A. J.	(157)
Lorenz, A.—Treatment of Epilepsy with Bromopin	432	MacCoy, C.—Melancholia and Stupor	*404
Lutaud, A.	62	Nacke, J.—Macroscopic Changes In Brains of Male Paretics ..	122
Mackis, F. P.—Condition of Blood in Insane	315	Nancy, B. de—Hysterical Anesthesia	430
Mahler, J.—Thomsen's Disease ..	310	Nartouski and Billchousky.—Action of Diphtheria Toxin on Nervous System	482
Mailhouse, M.—Facial Hemiatrophy	225	Nawratzki, E.—Disturbance of Sensation in Distribution of External Cutaneous Nerve of Thigh	56
Mairet, and Ardin-Deltiel.—Toxicity of Sweat of Epileptics ..	426	Nicloux, M.—Mothers and Alcohol	42
Marburg, O. and Czyhlarz, E. V.—Cerebral Bladder Disturbances	477	Noyes, W. B.	(291)
Marie, P.—Different States of Cavity Formation in Brain ..	589	Obersteiner, Heinrich	60, 644
Marinesco, G. — Nature and Treatment of Acute Myelitis, 247; Changes in Cell-body and Nucleus after Division of Axone	589	Onuf, B.	(154), (418), (463)
Martin, Edward	125	Oppenheim, H.	375
Mayer, E. and Wickel, C.—Ziehen's Modification of Flechsig's Treatment	320	Oppenheim, Nathan	375
Mazurkiewicz, J.—Disturbances of Pantomime Speech, 311; Traumatic Epilepsy	426	Osborne, O. T.—Physiological Influence of Ductless Glands ..	172
Mignot, R. and Serieux, P.—Cortical Deafness with Paralexia	421	Pagenstecher, F.—Death from Psychic Insult	43
Mills, C. K.—(37), (38), (161); Tabes and Disseminated Sclerosis, 162; Amyotrophic Sclerosis, 163, (165), (167), (228), (230), (232), (302); Peripheral Pseudo-Tabes with Exaggerated Reflexes, *435, (513), (566); Localization in Cortex and Subcortex of Cerebrum *595, (618)		Partsch, H.—Seasickness	49
Mills, C. K. and Weisenberg, T. H.—Differential Diagnosis of Cerebral and Hysterical Hemianesthesia	*285	Patrick, H. T.—Intermittent Claudication and Atypical Sciatica, 108, (308); Optic Atrophy, 472, 473, 474; Homonymous Hemianopia of Sudden Onset, 474; Facial Paralysis, Multiple Sclerosis and Cerebral Thrombosis, 474. (614), (616)	
Mirto.—Thermo - Electric Studies on Epileptic Brain	50	Paul, W. E. and Walton, G. L.—Clinical Value of Astereognosis; Bearing upon Cerebral Localization	*191
Monestier, A.—Suicide in General Paralysis	483	Pearce, F. S.—(35); Unusual Trauma with Secondary Bell's Palsy, 39; Traumatic Paralysis of Upper Limb, 161, (169), Neurasthenia,	231, (525)
Moot, F.—Action of Toxins on Nervous Tissues	536	Peterson, F.—(103), (155), (224)	(226)
Moyer, H. N.—Raynaud's Disease	471, (529)	Philips, C.—Morbid Anatomy of Progressive Atrophy	523
McBride, J. H.—Treatment of Morphine Habit	319, (628)	Pickett, Wm.—Scapulo-Humeral Reflex of von Bechterew, *273; Studies of Insanities of Adolescence,	*440, (527)
		Potts, C. S.—Bilateral Facial Palsy with Hemiplegia, 38; Progressive Unilateral Ascending Paralysis	*559

	PAGE		PAGE
Prince, M.	(101)	Schaumann, O.—Do any Genetic Relationships Exist between Appendicitis and General Neuroses?	637
Prout, T. P. and Clark, L. P.—Status Epilepticus; Nature and Pathology	29. (32)	Scherb.—Apoplectiform Attack with Hemiplegia	118
Putnam, J. J.	(101)	Schlapp, M. G.—(31); Paralysis Agitans without Tremor, 102; Paralysis of Duchenne-Erb Type, ... 102, (103), (106), (291)	
Putnam, J. J. and Taylor, E. W.—Diffuse Degeneration of the Spinal Cord	*1, *74	Schuler, L.—Observations upon Toe-Reflexes	47
Putnam, J. J. and Williams, E. R.—Tumors Involving Corpus Callosum	*645	Schultz, E.—Dormiol in Epilepsy	240
Rad, Carl V.—Multiple Uncomplicated Neuritis of Cranial Nerves	47	Schweinitz, Geo. E. de. (207). (301)	
Raecke.—Hysterical Delirium...	319	Serieux, P. and Mignot, R.—Cortical Deafness and Paralexia..	421
Railton, F. C.—Peripheral Neuritis	233	Shoemaker, J. V.—Danger of Spinal Anesthesia	421
Raiman, E.—Alcoholic Ocular Palsies	536	Short, A.—Remarks on Facial Paralysis with Special Reference to Treatment	640
Rainy, H.—Diphtheria Toxin, Action on Spinal Stichochrome Cells	177	Shumway, E. A.	(301)
Ransom, W. B.—Lead Encephalopathy; use of Diachylon as an Abortifacient	48	Simonelli, and Boeri.—Disturbances of Respiration in Hemiplegics	635
Rendu, J.—Hysterical Hyperthermia	513	Sinkler, W.—Paresis Simulating Brain Tumor (164), 294, (232),	(612)
Rene.—Traumatic Hemiplegia..	171	Soukhanoff, S. and Geier, F.—Pathological Anatomy and Histopathology of General Paralysis, 122; Multiple Neuritis of Upper Limbs.....	35
Riesman, D.—Probable Cerebellar Tumor, 33. (35); Unilateral Oculomotor Palsy	295	Spiller, Wm. G.—(34), (36); Progressive Ascending Unilateral Paralysis, 36, (39), (41), (100), (167); Symptoms of Cerebro-Spinal Meningitis, with Intense and General Alteration of Nerve Cell-Bodies, *140, (169), (228), (230), (302),	(526)
Riggs, C. E.—Hereditary Chorea	*519	Starr, M. A.—(154) Spinal Tumor; Operation and Removal..	155
Roglet, J.—Kernig's Sign	479	Stevens, A. A.—Chloretone.	
Roncoroni, L.—Relation between Epileptic Seizures and Auto-intoxication	476	Storck, A.	251
Rose, E.—Recovery in Epileptic Insanity	535	Stuart, F. H. and Vierordt, O..	591
Rossi and Gonzales.—Epilepsy and Myoclonus—Autopsy ...	425	Taylor, A. N.	126
Rothwell, J. W.—Intestinal Neuroses	235	Taylor, E. W. and Putnam, J. J.—Diffuse Degeneration of the Spinal Cord	*1, *74
Rowden, L. A.—Descending Landry's Paralysis	582	Taylor, J. M.—Amelioration of Paralysis Agitans by Systematic Exercises	*133
Russell, R. and Batten, F. E. and Collier, J.—Subacute Combined Degeneration of Spinal Cord..	366	Taylor, Wm. J.	(297)
Sachs, B.—(27), (32), (103), (154), (160), (292), (413), (465), (523); Progressive Muscular Dystrophies	414	Teglas and Heitz.—Treatment of Epilepsy by Flechsig's Method	54
Sailer, J.—(230); Bullet Wound of Spinal Cord—Operation	*327, (615)	Terriberly, J. F.	(107)
Savill, T. D.—Writer's Cramp and Other Professional Neuroses	576		
Schede.—Cerebellar Tumor	52		

INDEX

ix

	PAGE		PAGE
Teller, Wm. H. and Dercum, F. X.—Astereognosis Resulting from Brain Injury.....	*459	Cerebral and Hysterical Hemianesthesia	*285
Thomas, A. and Dejerine, J.—Olivary - Ponto - Cerebellar Atrophy	116	Whitehead, R. H.—Action of Gelsemium on Central Nervous System	246
Thompson, Wm. G.	185	Wickel, C. and Mayer, E.—Ziehen's Modification of Flechsig's Treatment	320
Thomson, Wm. H.	(28)	Wiener, A.—Locomotor Ataxia, 289; Sarcoma of Brain. 289, (417)	
Tourette, Giles de la—Bromide and Pupillary Sign in Treatment of Epilepsy	430	Williamson, E.—Forms of Tremor and their Clinical Characters	371
Townsend, W. R.—Tendon Transplantation for Deformity of Hand	290	Wiki, B. and Long, E.—Atrophic State of Spinal Cord in Chronic Spinal Syphilis	575
Ullman, J. and Cary, C.—Psychical Form of Epileptic Equivalent	*280	Williams, E. R. and Putnam, J. J.—Tumors Involving Corpus Callosum	645
Van Gieson, Ira	(523)	Williamson, E.—Palliative Treatment of Paralysis Agitans....	641
Veraguth, O.—Transitory Pure-Word-Deafness	47	Williamson, R. T.—Clinical Forms and Pathological Anatomy of Spinal Syphilis, 114; Myokymia	580
Vierordt, O. and Stuart, F. H..	591	Wing, E.—Defination, Pathology and Symptomatology of Epilepsy	528
Vulliet, H.—Spinal Anesthesia..	585	Winter, H. L.—Brain from Case of Epilepsy Operated upon....	466
Walton, G. L. and Paul, W. E.—Clinical Value of Astereognosis; Bearing upon Cerebral Localization. *191; President's Address before American Neurological Association..	*381, (607)	Wrafter, R. E.—Treatment of Hysteria	242
Ward, F. F.—Chloretone as a Hypnotic	179	Zingerle, H.—Symptomatology of Tumors of Corpus Callosum, 233; Vasomotor Neurosis. 236	
Warren, J. C.	124		
Weber, L.—(463); Malignant Tumor of Shoulder, 463; Cerebellar Apoplexy with Autopsy.	464		
Weisenberg, T. H. and Mills, C. K.—Differential Diagnosis			

INDEX OF SUBJECTS

Figures in parentheses () indicate discussions. Figures with asterisk * indicate original articles, and are accompanied with title. Figures unaccentuated, accompanied with title, indicate abstracts.

PAGE	PAGE
Abscess of Brain466	Atypical Sciatica and Intermittent Claudication108
Acromegaly419, (420)	Autointoxication and Epileptic Seizures—Relation476
Acromegaly-Gigantism-Diabetes173	Babinski Reflex(41), *214
Alcohol and Death Rates..... 51	Bell's Palsy—With Anesthesia, Trauma with Secondary..... 39
Alcohol and Mothers..... 42	Books Received127, 376
Alcoholic Ocular Palsies.....536	Borderland, the540
Amblyopia and Hemiplegia.....118	Brain—Bibliography, 51; Feb. p. xviii; Bibliography, 55; Apr. p. xviii; Bibliography, 61; Aug. p. xx; Abscess of, 466; Different States of Cavity Formation in, 589; Epileptic—Thermo-Electric Studies on, 50; from Epileptic, 466; Injury, *22, 239; Injury—Astereognosis Result of, *459, (468); Parasitic Cysts of, 579; Sarcoma of, 289; Surgery—Observation on, 234; Traumatic Diseases of, 480; Tumor Simulating Paresis, 294; Tumor—Bibliography, 57; May p. xviii; Bibliography, 61; Aug. p. xx; Weight of Grey and White Matter of Insane.....485
Ambulatory Epilepsy318	Bromide Treatment of Opium Habit,244
American Neurological Association*381	Bromides in Hysteria .. June p. xxii
Amyotrophic Lateral Sclerosis..523	Bromide in Treatment of Epilepsy430, 432
Amyotrophic Sclerosis and Bulbar Paralysis163, (164)	Bromipin178
Amyatropy-Progressive .. . 115	Brush Massage*24
Anemia with Changes in Spinal Cord(573)	Bulbar Paralysis—Chronic, 117; Acute584
Anesthesia—Bell's Palsy, with, 37; Eucaïn in Spinal, July p. xxii; Hysterical, 430; Spinal, 421, 585; Spinal-Bibliography, 49; Jan. p. xviii; Bibliographv, 63; Oct. p.xx	Carcinosis—Nervous Changes in588
Anterior Poliomyelitis—Acute..369	Catarrh—Chronic Gastric..... March p. xxviii
Aphasia—Dysarthric Form of Motor, 52; Subcortical Motor, 52; Bibliography, 51; Feb. p.xviii	Cell-Body and Nucleus—Changes in589
Apoplectic-Myelitis313	Cerebellar Apoplexy464
Apoplexy—Cerebellar, 464; Traumatic426	Cerebellar Ataxia and Paralysis.246
Apoplexy and Epilepsy587	Cerebellar Atrophy — Olivary-Ponto116
Appendicitis and General Neuroses637	Cerebellar Tumor33, 52
Astereognosis—(229), 579; Clinical Value of, *191; Result of Brain Injury,*459, (468)	Cerebellum—Simple Serous Cyst of*385
Ataxia—Acute, 105, (106); Locomotor, 289; Locomotor—Diagnosis, Sept. p. xxiv; Paralysis and Cerebellar246	
Atrophy—Binocular Hemianopsia and Optic Nerve, *398; Hereditary Muscular, 312; Infantile Progressive Spinal Muscular, 635; Muscular, *408; Olivary-Ponto-Cerebellar 116; Optic, 472, 473, 474; Progressive Muscular,523, 564, (565)	

PAGE	PAGE
Cerebellum—Tumor of Superior Worm of*543	Diabetes—Gigantism—Acromegaly and173
Cerebral Bladder Disturbances.477	Diagnostic Value of Graefe's Symptom 49
Cerebral and Hysterical Hemianesthesia (228), *285	Diphtheria — Toxin-Action on Spinal Stichochrome Cells177
Cerebral Hemorrhage with Verucose Endocarditis693	Diplegia and Hemiplegia in Infantile Cerebral Paralysis.... 45
Cerebral Localization—Astereognosis—Bearing upon.....*191	Diplegia154, (154)
Cerebral Paralysis—Infantile—Hemiplegia and Diplegia in... 45	Dormiol in Epilepsy240
Cerebral Thrombosis—Facial Paralysis—Multiple Sclerosis.474	Ductless Glands—Physiological Influence of172
Cerebro-Spinal Meningitis.....*140	Dystrophy—Muscular*149
Cerebrum—Separate Localization in Cortex and Subcortex of.....*595, (607)	Dystrophy and Paralysis of Muscles*355
Chicago Neurological Society108, 303, 419, 471, 528	Dystrophies—Progressive Muscular414, (417)
Chorea and Gravid Chorea....578	Eight Cases of Goiter in One Family692
Chorea—Hereditary*519	Epilepsy and Accident, 427; Ambulatory, 318; and Apoplexy, 587; Conservative Craniectomy in, 587; Disturbances of Consciousness in, 316; Dormiol in, 240; Eosinate of Sodium in Treatment of, 53; Hemi-Craniectomy for, 54; Hemiplegia—Cortical Sclerosis, *67; Hereditary, 50; and Infantile Eclampsia, 309; and Idiocy—Complete Recovery, 238; Migraine and 176; and Myoclonus, 425; New Symptom of, 175; Pathology, Symptomatology of, 528, (529); Progress of, 586; Thyroid Feeding in, 240; Treatment, 54, 241, 242, 243, 430, 432; Trephining for Traumatic 54
Chloralamid245	Epileptic—Brain from, 466; Equivalent, *280; Psychosis—Degenerative, 238; Insanity—Recovery in, 535; Seizures and Auto-intoxication — Relation, 476; Sexual Life, and Posterity of.534
Chloretone321	Epileptics and Feeble-Minded—Effect of Alcohol on, 310; Toxicity of Sweat of.....426
Chloretone as a Hypnotic179	Epilepticus—Status 29
Chlorosis—Optical Neuritis in..311	Ergograph—Studies with the.....*620, (628)
Chronic Hydrocephalus—Character of Spinal Fluid in..... 45	Erythromelalgia175
Chronic Spinal Syphilis—Atrophic State of Cord in.....575	Etiology of Chorea Minor..533, 577
Congenital Hernia Cerebri 120	Exophthalmic Goiter, 585; Bibliography, 51; Feb. p. xviii; and Hysteria173
Congenital Ophthalmoplegia....422	Facial Hemiatrophy 225, (225)
Cortex and Subcortex of Cerebrum—Separate Localization in*595 (607)	Facial Palsy with Hemiplegia—Bilateral 38
Cortical Deafness and Paralexia 421	
Cortical Sclerosis—Hemiplegia and Epilepsy*67	
Corpus Callosum—Symptomatology of Tumors of233	
Cranial Measurements of Idiots.374	
Craniectomy in Epilepsy—Conservative587	
Craniectomy Instruments—New 535	
Cremasteric Reflex in Sciatica..577	
Cutaneous Lesions with Neurotic Symptoms 291, (291)	
Cutaneous Sensibility—Muscular and*595, (607)	
Deformity of Hand—Transplantation for290	
Degeneration of Spinal Cord.....*1, *74, (100)	
Degeneration of Spinal Cord—Subacute Combined366	
Degenerative Epileptic Psychosis 238	
Delirium—Hysterical319	
Delirium Tremens—Pathology of 56	

	PAGE		PAGE
Facial Paralysis—Multiple Sclerosis—Cerebral Thrombosis, 474; Treatment,	640	Hysterical Anesthesia, 430; Delirium, 319; Hemianesthesia—Cerebral and, (228) *285; Hyperthermia	533
Facial Spasm—Rare Forms of, 638		Idiots—Cranial Measurements of	374
Flechsig's Treatment—Ziehen's Modification of	320	Idiocy and Epilepsy—Complete Recovery	238
Gasserian Ganglion	245	Infantile Cerebral Paralysis—Hemiplegia and Diplegia in, 45	
General Paralysis—Pathological Anatomy, 122; Suicide in,	483	Infantile Eclampsia and Epilepsy	309
General Paresis, 114; in Women, 428		Infantile Hemiplegia	422, 584
Gigantism—Acromegaly and Diabetes	173	Infantile Paralysis	370
Goiter—Exophthalmic	584	Infantile Progressive Spinal Muscular Atrophy	635
Gonorrheal Nervous Diseases, 636		Influenza and Nervous System, 43	
Hallucinations	317	Injury—Spinal Cord,	465, (465)
Hematology of Neurasthenia, 305		Insane—Blood in	315
Hemianesthesia—Cerebral and Hysterical	(228) *285	Insane Jew	540
Hemiparesis and Homonymous Hemianopsia	*455	Insanities of Adolescence (229) *440	
Hemianopsia, 478; Hemiparesis and Homonymous, *455; Homonymous, 474; and Optic Nerve Atrophy—Bin-ocular, 398		Insanities—Treatment of Acute, 484	
Hemiatrophy—Facial,	225, (225)	Insanity—Clinical Classification of, *489; Late Recoveries in, 315; Recovery in Epileptic,	535
Hemiplegia and Amblyopia, 118; Bilateral Facial Palsy with, 38; and Diplegia in Infantile Cerebral Paralysis, 45; and Epilepsy—Cortical Sclerosis, *67; Infantile, 422, 584; Traumatic, 171		Insomnia—Remarkable Case—Treatment	*363
Hemiplegics—Disturbances of Respiration in	635	Internal Antisepsis	Mar. p. xxii
Hemi-Craniectomy for Epilepsy, 54		Intracranial Pressure	237
Hereditary Chorea	*519	Intermittent Claudication and Atypical Sciatica	108
Hereditary Disseminated Sclerosis	639	Ischemic Paralysis—Acute	115
Hereditary Epilepsy	50	Kernig's Sign	479
Hereditary Muscular Atrophy, 312		Landry's Paralysis—Descending, 582; Bibliography, 53; March	p. xviii
Hereditary Nervous Disease, 42		Lead Encephalopathy	48
Hereditary Spasmodic Paraplegia	639	Localization of Naming Center, 576	
Herpes Zoster—Pathology of, 428		Locomotor Ataxia—see Tabes, Locomotor Ataxia—Diagnosis—	Sept., p. xxiv
Histological Diagnosis of Hydrophobia	310	Lumbar Puncture—Dangers of, 50	
Homonymous Hemianopsia, 474		Luxation of Ulnar Nerve—Recurrent	371
Homonymous Hemianopsia and Hemiparesis	*455	Macroscopic Changes in Brains of Male Paretics	122
Hydrocephalus—Chronic—Spinal Puncture in	45	Melancholia	*404
Hydrophobia—Histological Diagnosis	310	Meningitis—Bibliography, 57; May p. xviii; Cerebro-Spinal, *140, (169); Otogenous, 636; Tuberculous,	159, (160)
Hysteria—Bibliography, 57; May p. xviii; Bromides in, June p. xxii; Traumatic—Prognosis of, 638; Treatment of, 242, 522, (523), 532; and Exophthalmic Goiter	173	Menopause—Thyroid Gland and 51	
		Mental Affections—Thyroid Extract in	121
		Mental Disease—Stadia of,	*629
		Mental Pathology—A Study in, 249	
		Mercuriol—Use of	55
		Migraine—Cause of	176
		Migraine and Epilepsy	176

PAGE	PAGE
Morphine Habit—Treatment.....319	Neuritis—Arsenical Peripheral, 583; Bibliography 62, p. xx; in Chlorosis—Optical, 311; Multiple, 35, 167, (167); Multiple—Uncomplicated, 47; Peripheral, 233; Treatment of Arsenical..585
Mothers and Alcohol 42	Neuroses—Appendicitis and General, 637; Intestinal, 235; Vasomotor236
Motor Aphasia — Dysarthric Form of, 52; Subcortical 52	Neurotic Symptoms—Cutaneous Lesions with291, (291)
Motor Neuroses—Bibliography, 59, June p. xx	Neurotics—Treatment of Female May p. xx
Multiple Neuritis, 35, 167, (167); Uncomplicated, 47	New York Neurological Society, 27, 102, 154, 224, 289, 413, 462, 522
Mutiple Sclerosis, 532, *559; Facial Paralysis — Cerebral Thrombosis474	Oculomotor Palsy462
Muscular Atrophy, *408; Hereditary, 312; Progressive, 564, (565); Infantile Progressive Spinal635	Opium Habit—Bromide Treatment of244
Muscular and Cutaneous Sensibility *595, (607)	Ophthalmoplegia—Congenital422
Muscular Dystrophies—Progressive414, (417)	Optic Atrophy 472, 473, 474
Muscular Dystrophy*149	Origin of Neurasthenia 42
Muscular Irritability — Tendon Reflexes in Tabes Dorsalis... 51	Otogenous Meningitis636
Musculo-Spiral Paralysis370	Palsies—Alcoholic Ocular.....536
Myasthenia Gravis.....368	Palsy—Oculomotor, 462; Unilateral Oculomotor295, (296)
Myelitis Apoplectica313	Pantomime Speech Disturbances311
Myelitis—Patellar Reflex in High Transverse636	Paralexia and Cortical Deafness421
Myelitis—Treatment of Acute..247	Paralysis—Acute Bulbar, 584; Acute Ischemic115
Myoclonus and Epilepsy.....425	Paralysis Agitans, 102; Amelioration of, *133; Palliative Treatment of, 641; Symptomatology of477
Myokymia580	Paralysis—Amyotrophic Sclerosis and Bulbar, 163, (164); of Brachial Plexus — Clinical Forms of, 170; Brown-Sequard's, 583; Cerebellar Ataxia and, 246; Chronic Bulbar, 117; Descending Landry's, 582; Duchenne-Erb Type102
Myopathy165	Paralysis and Dystrophy of Muscles, *355; Facial—Multiple Sclerosis—Cerebral Thrombosis, 474; Facial—Treatment, 640; Infantile, 370; Infantile Cerebral-Hemiplegia and Diplegia in, 45; Musculo-Spiral, 370; Pathologic Anatomy of General, 122; Progressive Unilateral Ascending, 36, *559; Spinal Accessory, 224, (224), 292; Suicide in General, 483; Traumatic, 161, (162); Unilateral Oculo-Motor168
Nerve Cells—Putrefaction in Pathological Changes in.....482	Paraplegia—Hereditary Spasmodic639
Nerve Lesions—Neuralgia and..475	
Nervous System—Action of Diphtheria Toxin on, 482; Action of Gelsemium on246	
Nervous Changes in Carcinosis.588	
Nervous Diseases—Gonorrheal, 636; Hereditary 42	
Nervous System and Coffee....534	
Nervous Symptoms of Malarial Origin575	
Nervous System—Influenza and 43	
Nervous System and Stomach in Tetany of Stomach—Changes in481	
Nervous Tissues—Selective Action of Toxins on536	
Notes and News, 63, 128, 186, 254, 323, 377, 433, 486, 541, 593	
Neuralgia and Nerve Lesions..475	
Neurasthenia, 231, (232); Hematology of, 305; Subjective Symptoms, 311; Origin of..... 42	

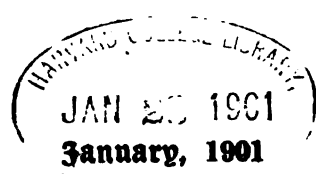
	PAGE		PAGE	
Parasitic Cysts of Brain.....	579	Sciatica—Cremasteric Reflex in,	577; Intermittent Claudication and Atypical	108
Paresis—See General Paresis.		Sclerosis—Amotrophic Lateral,	523; Bulbar Paralysis and Amyotrophic, 163, (164); Cortical—Epilepsy Hemiplegia, *67; Hereditary Disseminated, 639; Multiple, 532, *559; Multiple—Facial Paralysis — Cerebral Thrombosis, 474; Tabes and Disseminated	162
Paresis Simulating Brain Tumor	294	Seasickness	49	
Parkinson's Disease	174	Septic Conditions—Treatment.. June, p. xviii	
Pathology of Herpes Zoster....	428	Spasmodic Paraplegia—Hereditary	639	
Pathology of Delirium Tremens 56		Speech—Disturbance of	42	
Pathology and Symptomatology of Epilepsy	528, (529)	Spinal Accessory Paralysis..... 224, (224), 292	
Pathological Anatomy of Spinal Syphilis	114	Spinal Anesthesia, 421, 585; Bibliography 49, Jan. p. xviii; Bibliography 63, Oct. p. xx; Eucain in, July p.	xxii	
Philadelphia Neurological Society, 33, 161, 228, 294, 468, 525, 572		Spinal Cord Affections—Traumatic	424	
Poliomyelitis—Acute Anterior..	369	Spinal Cord—Bullet Wound in, *328; Degeneration of *1, *74; (100); Diseases—Intoxication in, (525); Injury, 465, (465); Subacute Combined Degeneration of 366; Trauma—Bibliography 63, Oct. p.	xx	
Poliomyelitis—Bibliography, 64; Oct. p.	xxiii	Spinal Fluid—Character of—in Chronic Hydrocephalus	45	
Polioencephalitis Superior	303	Spinal Meningitis—Cerebro.... *140, (169)	
Progressive Amyotrophy	115	Spinal Puncture in Chronic Hydrocephalus	45	
Progressive Atrophy	523	Spinal Syphilis — Pathological Anatomy	114	
Progressive Muscular Atrophy.. 564, (565)	Spinal Tumor—Operation 155, (155)		
Progressive Muscular Dystrophies	414, (417)	Status Epilepticus	29	
Progressive Spinal Muscular Atrophy—Infantile	635	Subacute Combined Degeneration of Spinal Cord	366	
Progressive Unilateral Ascending Paralysis	36, *559	Subcortical Tumor of Occipital Lobe	*455	
Prognosis of Psychosis of Puberty	483	Suprarenal Extract—Therapeutics of	178	
Progress of Epilepsy	586	Symptomatology and Pathology of Epilepsy	528, (529)	
Psychic Insult—Death from	43	Symptomatology of Paralysis Agitans	477	
Psychical Deafness	46	Syphilis — Spinal Pathological Anatomy of	114	
Psychosis—Periodical	27	Syphilis—Treatment .. May p. xxvi		
Psychosis of Puberty—Prognosis of	483	Syringomyelia in Negro.....	109	
Psychosis in Typhoid Fever....	249			
Pseudo-Tabes with Exaggerated Reflexes	*435			
Physiological Influence of Ductless glands	172			
Pupillary Reaction — Little Known	237			
Rationale of Subjective Healing*	342			
Raynaud's Disease	471			
Reflex—Babinski	(41)			
Reflex—Cremasteric—in Sciatica	577			
Reflex—Patellar—in High Transverse Myelitis	636			
Reflex—Scapulo-Humeral	*273			
Reflexes—Bibliography 62; Sept. p. xx; Pseudo-Tabes with Exaggerated, *435; Toe—Observations on, 47; Toe—Significance of	46			
Sarcoma of Brain	289			
Scapulo-Humeral Reflex *273, (526)				

	PAGE		
Tabes and Disseminated Sclerosis	162	Traumatic Hysteria—Prognosis of	638
Tabes Dorsalis, *259; Bibliography, 55, April p. xviii; Muscular Irritability—Tendon Reflexes in, 51; Early Diagnosis of, 113; Hitherto Unnoted Complication in, 113; and Trigeminal Disease, 582; Trophic, 113; in Women,	578	Traumatic Paralysis	161, (162)
Tabetic Crises	691	Traumatic Spinal Cord Affections	424
Tea Intoxication and Spinal Symptoms	(572)	Transitory Pure Word-Deafness	47
Tetany and Psychosis	693	Trauma in the Pathogenesis of Syringomyelia	691
Tetany following Intoxication	313	Treatment — Acute Insanities, 484; Acute Myelitis, 247; Arsenical Neuritis, 585; Enteritis with Xeroform, Jan. p. xxiv; Epilepsy, 54, 241, 242, 243, 430, 432; Epilepsy—Eosinate of Sodium in, 53; Facial Paralysis, 640; Female Neurotics, May p. xx; Hysteria, 242, 532; Morphine habit, 319; Paralysis Agitans, 641; Spasmodic Torticollis, 103; Syphilis, May p.	xxvi
Tetany of Stomach—Changes in Nervous System and Stomach in	481	Trephining for Traumatic Epilepsy	54
The Clinical Forms of Puerperal Insanity	694	Tremor — Forms of — Clinical Characters	371
Therapy of Pituitary Body Extract	120	Trichiniasis	(572)
Thermo-Electric Studies on Epileptic Brain	50	Trigeminal Diseases and Tabes	582
Thomsen's Disease	310	Tuberculous Meningitis	159, (160)
New Treatment for	55	Tumor—Cerebellar	33, 52
Thymus Extract in Vasomotor Affections	120	Tumors involving Corpus Callosum	*645
Thyroid Extract in Mental Affections	121	Tumor—Optic Thalamus, 464; Spinal—Operation, 155 (57); Shoulder—Malignant, 463; Subcortical—of Occipital Lobe, *455; Superior Worm of Cerebellum, *543; of Corpus Callosum—Symptomatology of	233
Thyroid Feeding in Epilepsy	240	Typhoid Fever—Psychosis in	249
Thyroid Gland and Menopause	51	Vasomotor Neuroses	236
Thyroid Treatment July p. xxii		Vertebra—Dislocation of Seventh Cervical	*515
Toe Reflexes—Observation on, 47; Significance of,	46	Vision—Relation of Time and Space in	179
Torticollis — Spasmodic Treatment of	103	Writer's Cramp and other Professional Neuroses	576
Toxicity of Sweat of Epileptics	426	Yohimbin—A New Aphrodisiac	538
Trauma with Secondary Bell's Palsy	39		
Traumatic Apoplexy	426		
Traumatic Diseases of Brain	480		
Traumatic Epilepsy—Trephining for	54		
Traumatic Hemiplegia	171		

INDEX TO BOOK REVIEWS

Berk ley, Henry J., Treatise on Mental Diseases.....	57
Bourneville, Recherches Cliniques et Therapeutiques sur L'Epi- leptic, L'Hysterie et L'Idiotie.....	184
Bruce, Alexander, A Topographical Atlas of the Spinal Cord....	695
Cassirer, Richard, Die Vasomotorisch-Tropischen Neurosen.....	182
Deaver, John B., Treatise on Human Anatomy in its Application to the Practice of Medicine and Surgery.....	125
Dejerine, J., Semiologie du Systeme Nerveux.....	252
Ellis, Havenlock, Studies in Psychology of Sex.....	251
Gould, Geo. M., The American Year-Book of Medicine and Sur- gery	591
Hughes, Henry, Die Mimic des Menschen auf Grund Voluntar- ischer Psychologie	253
Hutchinson, Robert, Food and the Principles of Dietetics.....	591
Ireland, Wm. W., Mental Affections of Children, Idiocy in Imbecil- ity and Insanity.....	126
Laehr, Heinrich, Die Literatur der Psychiatrie, Neurologie und Psychologie, von 1459-1799.....	124
Lepine, Jean, Etude sur les Hematomyelies.....	251
Lutaud, A. Manuel Complet de Gynecologie Medicale et Chirurgi- cale	62
Martin, Edward, Essentials of Surgery.....	125
Obersteiner, Heinrich, Arbeiten aus dem neurologischen Insti- tute an der Wiener Universität.....	60
Anleitung beim Studium des Baues der nervösen Centralorgane im gesunden und kranken Zustande.....	644
Oppenheim, H., Diseases of the Nervous System.....	375
Nervenleiden und Erziehung	643
Oppenheim, Nathan, The Care of the Child in Health.....	375
Stuart, Francis H. and Vierordt, Oswald, A Clinical Text-Book of Medical Diagnosis for Physicians and Students.....	591
Taylor, Arthur N., The Law in its Relations to Physicians.....	126
Thompson, Wm. G., A Text-Book of Practical Medicine.....	185
Vierordt, Oswald and Stuart, Francis H., A Clinical Text-Book of Medical Diagnosis for Physicians and Students.....	591
Warren, John Collins, Surgical Pathology and Therapeutics....	124

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TABLE OF CONTENTS ON PAGES II. AND IV.

FOREIGN AND DOMESTIC AGENTS

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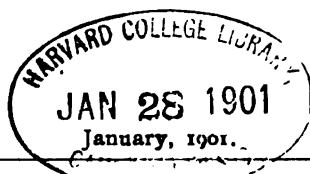
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THE
Journal
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Original Articles.

DIFFUSE DEGENERATION OF THE SPINAL CORD.*

Clinical Analysis of Fifty Cases.

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Pathological Study of Five Cases.

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(From the Sears Pathological Laboratory, Harvard Medical School.)

About nine years ago one of the writers published a brief discussion of certain diffuse degenerations of the spinal cord,¹ based on the observation of eight cases, four of them with autopsy. In one or two of these cases the spinal lesion had been associated with anemia of a profound type, and in the rest with other forms of mal-nutrition, not definitely classifiable but often attended with diarrhea and emaciation, and in one case with extensive pigmentation of the skin of high degree. Most of the patients were women and all were in the later stages of adult life.

Some of the descriptions, now classical, by Lichtheim, Minnich, and others, of the spinal lesions found in connection

*Read in abstract at the twenty-sixth annual meeting of the American Neurological Association, May, 1900.

¹"A Group of Cases of Sclerosis of the Spinal Cord, Associated with Diffuse Collateral Degeneration; Occurring in Enfeebled Persons Past Middle Life, and Especially in Women."—JOURNAL OF NERVOUS AND MENTAL DISEASE, Feb., 1891.

with pernicious anemia had already been published, but the analogy between these and the degenerative, diffuse, or "combined" scleroses associated with other forms of wasting disease, as described in the above mentioned paper, had not been noted. The subject was next taken up by Dana,² who has published from time to time papers of much value, the last of them containing a reference to the most important publications bearing on the subject, with an excellent summary of symptoms, etc., and the report of a new case, with autopsy.

Cases closely resembling those reported by Dana and myself have been described by various observers, but no serious attempt had been made by any European writer to utilize them for classification, or to point out the similarities and contrasts which exist between this group, where the disorder of nutrition is ill-defined, and the group of the spinal degenerations complicating the pernicious anemias, previous to the publication of Bastianelli's³ monograph in 1896.

Before speaking of Bastianelli's principle of classification I desire to call attention to another investigation which seems to me to throw light on the etiology of this disease from a new quarter. The belief has long been current that back of the changes in the bloodmaking organs and the nervous system, there was a toxic agent at work, derived perhaps from the intestinal canal, perhaps from other sources.⁴ A new step forward in the etiological study of pernicious anemia, and, we may hope, of the nervous diseases which are so frequently associated with pernicious anemia, as well as with other forms of mal-nutrition, has been made by the investigations of Adami and others to whom he refers,⁵ on the different forms of acute and chronic infection due primarily to the presence, in vari-

²JOURNAL OF NERVOUS AND MENTAL DISEASE, Feb., 1891; April, 1891; Jan., 1899.

³"Le Sclerosi Combinata del Midollo Spinale Nelle Anemie Perniciose," Bul. della Royal Acad. Med. di Roma, 1895-6, Fascicolo I. e II.

⁴Compare Eisenlohr: "Ueber Primäre Atrophie der Magen und Darmschleimhaut, und deren Beziehung zu schwerer Anemie und Rückenmarkserkrankung." Deutsche med. Wochenschrift 8, Dec., 1892, p. 1,105. See also Minnich's classical Monograph.

⁵"On Latent Infection and Subinfection and on the Etiology of Hemochromatosis and Pernicious Anemia." By J. George Adami, M.D. Annual address before Society of Internal Medicine, Chicago, Nov. 29, '99.

ous organs and tissues, of bacteria or bacterial poisons derived from the intestines, and to the reactive efforts of the tissue cells, which, though successful in overcoming the danger of specific infection, may be attended with a fatal exhaustion. The diseases which Adami and others have especially studied in this connection are hypertrophic cirrhosis of the liver, hemochromatosis and pernicious anemia, but at the close of his address the writer throws out a hint which should certainly be taken advantage of in the study of such affections as those now before us when he says: "Nay, more, I believe that in the development of many chronic fibroid conditions this subinfection will be found to play a definite part."

As regards, now, the classification proposed by Bastianelli, it may be briefly said that this writer attempts to divide all the cases in which the aforesaid degenerative spinal lesions occur, in connection either with pernicious anemia or with the more chronic forms of mal-nutrition, into two groups, between which, it may be, the line of separation is not to be too sharply drawn.

In the first group it is the anemia which dominates the scene, the spinal lesions making themselves felt only toward the end of life, when they develop with great rapidity. In this group many of the classical cases, as reported by Lichtheim, Minnich and many others, belong. It will be remembered by any one familiar with the literature that the records of these observers call particular attention to the rapidity with which the nervous symptoms run their course, the fatal issue often occurring in the course of a few months.

In the second group, in which the more chronic cases belong, including most of those reported by Dana and myself as well as others contributed by a number of European physicians and by the writer himself, the essential feature of the case, Bastianelli thinks, is the disease in the nervous system, the mal-nutrition being of secondary importance. The disease of the central nervous system in the cases of this second group occasionally strikes beyond the limits of the spinal cord, involving the optic nerves, for example, as in one of Bastianelli's cases. The anatomical lesions, too, he thinks, differ

somewhat in character. In the cases of the first group they are relatively slight and scattered, and the lateral columns in particular are relatively little affected, while in those of the second group they are more pronounced and the lateral columns more sharply and extensively involved.

As regards the lesions of the blood vessels, Bastianelli finds them less marked in the cases of the first group, where the lesions occupy relatively limited areas, and more marked in the typical, quasi-systematic, whole-column degenerations, though on the vascular-origin theory, as upheld by Marie, one might expect the reverse to be the case. In other words, he thinks that the vascular changes are secondary and keep pace with the intensity of the sclerotic process.

So far as our observations go this triple distinction between the two groups of Bastianelli is not fully maintained, though doubtless of importance and value. Substantially the same distinction has been drawn in the recent communication of Risien Russell, Batten and Collier, to be referred to later. We do not find it to be invariably true that in the more chronic cases, in which the nervous symptoms have played a prominent part for many years, the spinal lesions are necessarily most marked. Thus, we have one case, with autopsy (Pathological Report, Case IV.), where the patient, a lady small in stature and with a pale skin and feeble nutrition, suffered from the characteristic paresthesia, gradually leading to ataxia, for thirteen years, yet the spinal lesions were of relatively slight intensity, and that, too, in spite of the fact that the previous death of her sister from a similar affection had shown some degree of hereditary predisposition to spinal degeneration. In Case I. of the former series of cases, published in 1891 (*l. c.*), on the other hand, the lesions were of a quasi-systematic character and strongly marked, though the clinical course had been so short that it was difficult to believe it possible that the duration of the symptoms marked the duration of the disease.

It certainly cannot be true, and is apparently not claimed by Bastianelli, that the dividing line leaves all the cases in which pernicious anemia is present in one group and all the

rest in the other. In general terms this distinction is doubtless justifiable, but there are striking exceptions. In one of our cases (Pathological Report, Case V.) pernicious anemia was present and ran a typical course, yet spinal symptoms were recognizable for three years, their onset nearly coinciding with the onset of pallor and with a loss of flesh. It is noteworthy that this patient, like others of this series, had always been pale, even when thought to be well. The interesting fact should be borne in mind in this connection that routine examinations of the spinal cord in cases of profound or "pernicious" anemia have shown that degenerative changes may be present, though they have not been revealed by symptoms during life. These observations are borne out and paralleled by that of Nonne,⁶ who reports a case where recovery in a clinical sense occurred, though the spinal lesions were found to have persisted. The recognition of these facts should make us hesitate to assume that the development of the spinal lesions, which seems so extraordinarily rapid in some of the reported cases, as, for example, in Case I. of the first series, is really limited to the period indicated by the presence of clinical symptoms.

Among the most recent communications touching on this subject is that of Pitren,⁷ who examined the spinal cord in nine cases of pernicious anemia, in two of which spinal symptoms had been present. Not only in these latter, but in two other cases in which no symptoms of spinal degeneration had been noticed, slight signs of chronic change were found in the posterior columns. Similar observations had also been made by Nonne,⁸ who examined the spinal cord in thirty-one cases of anemia, and by Minnich.

The latest special study of this disease is recorded in an interesting paper by Drs. Risien Russell, Batten and Collier,⁹ reporting nine cases, with seven autopsies, and giving a full list of the literature, which is not, however, discussed in detail. The opinion expressed by these writers is much the

⁶Archiv. für Psychiatrie, etc., 1893.

⁷Nord. med. Ack., 1896. (Abstract in the Neurol. Cbl., 1896, p. 747.)

⁸Deutsche Zeitschr. f. Nervenheilkunde, 1895.

⁹Brain, Spring, 1900.

same with that of Bastianelli (though his views are not cited) in that they think a distinction should be made between the spinal degeneration which appears toward the end of the severe anemias and runs a rapid course, forming perhaps only an incident in the main affection, and the more chronic cases in which the spinal degeneration is the essential feature, while anemia occupies a less prominent place or may even be wanting. They agree with him, too, that in the former group the lesions are more likely to occur in disseminated patches, while in the latter they are more systematic and defined. They see no reason for excluding from the second group such affections as Gowers' ataxic paraplegia. These writers range themselves with those who refrain from making a diagnosis of pernicious anemia from examination of the blood alone, and they adopt without reserve the view that the cause of the spinal change is neither degeneration of the gray matter, nor multiple hemorrhages, nor anemia, nor alteration of the blood vessels, but that it is due to the introduction of toxic substances of some sort. The arguments which they advance in favor of these opinions follow much the same line with those already advanced by Bastianelli. They divide the disease itself into three stages, characterized, in the main, by ataxia with slight spasticity, increased spasticity, complete paraplegia. While giving the prognosis as absolutely unfavorable, they cite a case, apparently of this sort, under the care of Ferrier, where the patient seemed to have recovered, although he had presented the characteristic symptoms, even including those of the third stage.

The peripheral nerves were examined in several cases and found normal in all but one or two, while in these fairly marked changes were present. While their account of the symptomatology is excellent and likely to be accepted as authoritative, it appears strange that they do not dwell more on the paresthesia of the early stage, which forms such a striking feature in my cases and in most of those hitherto published. The division into stages also seems to me to be of doubtful value, the passage from one to the other is often so gradual, and individual cases differ so much in detail from one

another. It has, however, quite as much importance as the corresponding division in tabetic cases.

On looking over my private clinical records (mainly of the past ten or eleven years) I find the notes of about fifty cases—if the group of eight cases reported in 1891 be included—which correspond pretty definitely to the type of the diffuse, sub-acute, sub-chronic or chronic spinal degeneration (in some of the cases perhaps more than spinal) which is before us for study. As only a few of these cases came to autopsy the correctness of the diagnosis in the majority is, of course, open to doubt. It is, however, difficult to see with what diseases this affection could be confounded, except unusual forms of chronic neuritis and multiple sclerosis.¹⁰ Doubtful cases have been excluded so far as practicable, and though mistakes in diagnosis may have been made, it is clear, at all events, that the affection is common enough to deserve far more attention than most text-books accord to it. It is also fairly certain that, although pronounced anemia is by no means always present, nor impairment of nutrition invariably, and though the patients may be men as well as women, and are not always advanced in years, yet on the whole, the designation given in the heading of the paper published in 1891 (*l. c.*) is justifiable and suggestive.

I have not attempted to utilize hospital records to any extent in the preparation of the following analysis, but have selected for the sake of convenience nine cases to bring the whole number, exclusive of those already published, up to fifty. It has not seemed worth while to burden the paper with the records of these cases in detail and I have attempted only to extract from the histories such clinical facts as are of practical value or special interest.

Sex.—Of the fifty cases there were seven (all private) in which profound anemia¹¹ was present, characterized by serious and well-marked blood-changes (low red-count, megalocytosis and

¹⁰Although the greater number of these patients were seen only in consultation, yet I have records of the later histories of most of them, by the aid of which the diagnoses are placed almost beyond question.

¹¹In a few others the diagnosis in this respect was doubtful.

poikilocytosis), and of these seven, five were males; two, females. In contrast with these figures, it is noteworthy that of the remaining forty-three patients thirty-one were women and twelve men, numbers which fully bear out the earlier statements of Dana and myself, to the effect that the lack of vigor or some other peculiarity of the female sex carries with it a certain degree of susceptibility to this affection. This fact, especially when linked with two others, namely, first, that the patients almost without exception were of relatively feeble health or advanced years, or both; and, second, that *indications of syphilis were exceedingly rare*, if not, indeed, wholly absent, is of value as helping to point the direction in which etiological research should tend.

Age.—As regards the ages of the patients, twenty-three, *i. e.*, more than half, were fifty years old or more at the time of the onset of the disease, and all but five were over thirty years old. The oldest patients were seventy-one and sixty-eight (a woman and a man, respectively) and the youngest twenty-two, all, it should be said, without autopsy. Erlicki and Rybalkin,¹² however, have reported a case where the patient was a girl of but seventeen. The case came to autopsy and the typical anatomical changes were found in the spinal cord. It is interesting to note that, in this case, although the ostensible exciting cause was a "cold" and fever of short duration, yet the patient was, from birth, of small stature. Death occurred at the end of a year and a half from the onset of the spinal symptoms.

Nutrition.—The next question is whether any characteristic disorders of nutrition other than severe anemia were present which might act as predisposing causes; or, in other words, whether the "general feebleness," so often referred to, can be more accurately defined, or can be considered as a causative factor.

A review of the cases shows that, as in the instance just reported, *small stature* or slenderness of frame was fairly common, though by no means always noticeable. It was present to a striking degree in Case I. of the group reported nine years

¹²Arch. f. Psych., etc., '86, p. 693.

ago. Other signs present in the same case were emaciation and an excessive pigmentation of the skin, which was as dark as that of an Indian. The patient was eccentric, excitable and addicted to coffee in excess, and perhaps to other stimulants. The same small stature was observable in one of the cases of the present series, which was followed by autopsy. (Case IV.) The case was a chronic one, the symptoms running over thirteen years. Pernicious anemia was not present, certainly not in a typical form, but the patient was excessively pale her life long, so that her face would attract attention as she walked the street. She, too, was eccentric to a marked degree, and without well-balanced judgment, yet spirited and full of plans and projects, which were carried out with remarkable energy, considering her feeble health.

It might be urged that in both these cases the eccentricity was analogous to the mental changes occasionally associated with pernicious anemia. Yet the peculiarities of temperament, not only in these two cases, but also in one of true pernicious anemia, to be spoken of later, were in a measure native, neurotic stigmata, and only accentuated by the later degeneration of the general nutrition. Meantime, the important thing at present is to record facts and coincidences as they appear, and it is certainly true that eccentricities of character, associated with other neuropathic signs, were present in several cases of this series.

General lack of vigor, usually from childhood, often accentuated by family or business worries, the strain perhaps resulting from the long illness and eventual death of a near relative, or the like, was conspicuous in a large proportion of the cases. Spare and sallow, when not distinctly anemic, men and women made up by far the greater number of the patients. Yet even this statement is not to be taken without exception, as there were a few who had no special complaint to make of their previous health.

Diarrhea,¹³ either chronic or of frequent occurrence, which seemed a prominent and important feature in the series of nine

¹³See also Bastianelli (*l. c.*). For the possible significance of diarrhea see Adami (*l. c.*).

years ago, and perhaps gains new importance through Adami's researches, was noted as present in a distinct form in only six or seven cases of this series.

Constipation, often quite obstinate, was much more common, but neither of them occurred so often as to remove the impression that if the penetration of germs through the walls of the intestine be indeed the essential cause of the toxemia, this may occur under the influence of impaired resisting power alone, or in association with latent disorders of the gastro-intestinal tract. Unfortunately, information is lacking as to the condition of the digestive secretions of the stomach, which Adami's citations show to be defective in some cases of pernicious anemia. This is certainly a point for investigation in future cases.

Pigmentation of the skin of high degree was seen in two cases,¹⁴ neither of them pernicious anemias, though both highly typical cases of Bastianelli's second group. It is also interesting to note, in connection with Adami's observations, that a physician who examined one of these patients at an early period of the affection pronounced her to have disease of the liver and intestine. Lesser degrees of pigmentation, amounting to no more than sallowness, were quite common.

In the earlier series of cases *lead* was noted as a possible partial cause of the severe anemia, and perhaps of the spinal symptoms in one or two cases.¹⁵ In the cases of the present series the same possible cause is occasionally seen. One patient came with a record of lead-poisoning in the past, and a trace of lead was found in the urine in another case, as also a large trace of arsenic in that of another. I do not, however, attach much importance to this fact, since it is one of such common observation.

Considerable *loss of weight* occurred in several cases as a part of the general nutritive impairment. It is worthy of mention that one patient, a woman of forty-six, besides presenting

¹⁴One of these patients is still living, but the blood certainly does not show as yet the characteristic changes of pernicious anemia. A sister has a progressive spinal affection which has led to paraplegia, and is probably of the sort now in question.

¹⁵One patient was a painter of many years' standing.

the characteristic sensory and motor symptoms of this affection, suffered and finally died with great enlargement of the liver, ascites, and jaundice. I do not, however, know which set of lesions was the first to appear.

A family history of neurotic tendency or nutritional weakness is fairly common. One patient (pernicious anemia) is an only child of parents, one of whom, the mother, died of tuberculosis at forty-one, the other of a "painful stomach disorder," of brief duration, at sixty-eight. The patient has one child, a delicate, hysterical girl, and has been himself from birth delicate and club-footed.

The family history of a second case (pernicious anemia) is of marked interest. The patient, a man of fifty, was one of a brilliant but highly neuropathic family of four sons and two daughters. The father, a man of unusual ability and energy, a tireless and successful man of business, and of fine personal traits, but excitable and positive, died of cerebral apoplexy at a moderately advanced age. The mother died of tuberculosis. The father belonged to a large family, many members of which were gifted but neurotic and eccentric. Of the patient's five brothers and sisters, three died with cancer, one of nephritis, one probably in consequence of dipsomania. In a third case (pernicious anemia) the patient's brother had suffered from an acute, severe and almost fatal attack of "multiple neuritis." In a fourth case, neurotic tendencies were absent, but the father had died with phthisis at forty, and the mother and sister had both been excessively pale before their death, the mother's skin having, too, it was said, a yellowish cast.

In a great majority of cases of the "simple debility" group,¹⁶ the patients' antecedents were not striking, and not other than one would expect in the family history of persons with poor nutrition. A few are, however, of importance. In one case (with autopsy, Case IV.), the patient being of small stature and of almost life-long pallor, and of an energetic and lively though eccentric disposition, an older sister had died, after a lingering illness, of a progressive spinal affection, probably of this same sort, characterized by exaggeration of the deep reflexes, asso-

¹⁶See also first report (*l. c.*), and Bastianelli's paper (*l. c.*).

ciated with tremor, and eventually with contractures of high degree and complete paraplegia. There had been occasional temporary disturbance of mind, but no affection of speech. This sister was seen by me a few times, towards the end of life, but before my interest in the present subject began. The patient herself was under my care, off and on, through the whole of her long illness.

In another case, characterized by pigmentation of the skin, though not by other signs of pernicious anemia,¹⁷ both the patient herself and also an older sister (one of three) were eccentric and addicted to chloroform-taking. This sister suffered from migraine. The father had died of phthisis. A second sister died in childhood from an unknown cause. A third sister and the mother had been well. In a third case,¹⁸ also characterized by pigmentation of the skin, an older sister became paralyzed below the waist, after a gradually progressive illness of three years' duration. Another sister, of rather small stature, is pale, delicate, and subject to sicknesses of hysteroid character. In a fourth case, both parents and a sister had been of delicate health, and the latter had died from a "complication of troubles" after a long period of invalidism. A fifth case¹⁹ is notable for the fact that a sister was said to have died of "pernicious anemia," though repeated examinations of the blood had failed to establish the diagnosis in the case of the present patient. A sixth patient of this group had two sisters, both of whom were said to have died with some disease suggesting softening of the brain.

Symptomatology. Paresthesias.—In the early history of my cases one or another form of this symptom was strikingly prominent. It was usually felt first in the feet, then in the hands—either all the fingers alike or in the median or ulnar areas by preference—but the proximal segments, as the shoulders or thighs, were occasionally attacked early, if not first, as occasionally in tabes. Sometimes the hands were involved first,

¹⁷Case seen but once, far in the country. No examination of blood, but a full and clear clinical record, partly personal, partly from the family physician.

¹⁸Patient still living.

¹⁹Patient still living.

but improved, while the legs then became involved and grew worse. In two cases the *genitals* were affected early, in one of them perhaps first, in like manner. With the numbness of this region an early loss of sexual power was associated. Drawing the finger along the penis caused an "electric thrill," like that sometimes seen in the hands under similar conditions. The loss of sexual power above referred to was preceded by herpetic eruption on the penis. In another case²⁰ (male patient), in which the blood examination likewise showed changes in size, shape, and number of the erythrocytes characteristic of a profound, if not a pernicious anemia, the *tongue* felt "numb" and as if a foreign body was on it, and there was a sense of constriction about the chest, although the illness had not yet reached so high a degree as even to prevent the patient from following his usual employment. Two other patients (females) had a similar involvement of the tongue, associated in one with "choking sensations," and slight impairment of swallowing and of speech. Bulbar symptoms of such sorts as these may, indeed, occur both early and in a serious form. Thus in one important case (with very serious blood changes) choking sensations, with difficulty in breathing, and both motor and sensory involvement of the lips (as well as of the limbs), came on near the onset and assumed a threatening character, but fortunately subsided later, after which the affection assumed its more usual form and course.

Sudden onset or rapid increase of numbness is occasionally seen, affecting one or another part, and on the other hand it may improve slightly or even pass away for a time, or recur, in the early stages, intermittently. The distress from this paresthesia, especially when it was felt as intense cold, or as like the burning of frost-bites, was sometimes extreme, and indeed almost unbearable without morphine.

Micturition may be involved early, in slight measure, and this symptom, too, is liable to variations in intensity or may temporarily disappear, as in tabes. Many patients complain early of *increased frequency of micturition*. Disturbance of the *rectal sphincter*, though met with, is not common until later in

²⁰Patient still living.

the disease, when it occurs in connection with paraplegia of the legs.

Reference has already been made to the *mental instability* exhibited by some of these patients, and to the fact that it is usually an exaggeration of native traits. It may be added that in one case (a typical pernicious anemia) this exaggeration reached an extravagant and almost unendurable degree. An examination of the brain in this instance (see Dr. Taylor's report, Case V) showed no changes of importance beyond those due to the very profound anemia in which the patient died. This fact is noteworthy, since, while mental symptoms have been repeatedly met with in pernicious anemia, but few reports have been made of anatomical studies of the brain.

I have recently seen for the second time (in consultation), after an interval of a year, a typical case of this series, with motor and sensory symptoms varying in intensity, but gradually getting worse, where mental changes of peculiar character had developed, though the spinal symptoms, though severe, had not reached the stage of complete paralysis. This is one of the cases where diarrhea had been prominent, and it was in convalescence from an attack of this that the patient became more or less incoherent (with relatively clear intervals), talkative, and noisy, delirious and even violent, and had spells of shivering and even, apparently, of complete unconsciousness, with rigidity. Extreme emaciation, incontinence of urine, and failure of strength, but without paraplegia and with but little fever, soon came on, and the patient died in exhaustion after a few weeks' illness.

Atrophy of the optic nerve, which was observed by Bastianelli and by Russell and his colleagues, was present in two, or perhaps three, of my cases. I will also mention one more case, probably of this sort, as perhaps indicating that the optic atrophy may occur as a very early symptom. The patient is a lady of sixty-six, energetic but never strong, always a sufferer from "stomach troubles," and weakened recently by an attack of pneumonia. On account of failing vision she consulted Dr. B. Joy Jeffries, who found $V = 20/32$, after correction of refraction, and relatively white disks, and kindly referred her to

me. She gave a history of slight paresthesia of the hands, feet, and tongue (as in other cases see below), where it had begun, and examination showed slight exaggeration of knee-jerks and wrist-jerks, and slight tremor of the head. There was no nystagmus, scanning speech, or intention-tremor of the hands, and no Romberg symptom, though a friend had noticed unsteadiness of gait.

In two cases *epileptiform attacks* occurred. In one they were very limited in number, and came on towards the latter part of the spinal disease (mental eccentricity was also present, and pigmentation of the skin); in the others they had occurred at intervals since the patient's fifteenth year of age.

The all-important problem of *etiology* admits of a solution only within narrow limits. An inheritance of feeble nutrition, special tendencies to disease of the sort in question, anxiety, overwork, gastro-intestinal disorders, perhaps metallic poisoning; such influences as these form a body of predisposing causes, the action of which we can in a measure guess at. Then come certain exciting, possibly localizing causes, which deserve mention. One patient, a physician, now considerably improved, but whose blood gives distinct evidence of primary anemia, found his hands numb for the first time immediately after a fatiguing obstetrical operation. In another case, where the anemia was also profound, though secondary, and the nervous symptoms progressive, the latter began during a severe post-partum hemorrhage, with which the disease, as a whole, was apparently ushered in. If all these influences are classified, they seem to fall into (1) those which lead to the introduction of poisons, among which the gastro-intestinal disorders are prominent; (2) those which induce lack of resistance on the part of the tissues to the action of these poisons, perhaps in the several senses indicated by Adami; (3) those which cause a native weakness of these special parts of the nervous system; (4) those which bring a special strain on the same parts, though just what the nature of this strain may be it would be guess-work to define.

The striking *absence of syphilis* from the histories of these patients has already been alluded to, and is of especial impor-

tance as accentuating the contrast between this disease and tabes, and the importance of that form of infection, not, indeed, as the sole cause of the latter affection, but as a frequent partial cause.

The relative predisposition of *sex* has also been noted above.

Finally, the great frequency with which prolonged *anxiety* and *worry* recur in the patients' histories leads one to realize anew the part mental influences play in regulating for good or evil the nutritive processes of the body.

The *duration* of the illness or of the patient's life seems to be very variable, and in view of the fact that in most of the cases reported some years ago by Lichtheim, Minnich, Nonne, etc., which were mainly examples of pernicious anemia, the nervous symptoms gained ground rapidly and led quickly to a fatal termination,²¹ while other cases have been of long duration, it appears reasonable to assume an acute and a chronic form of the disease, or else to assume that we have really to do with two different but kindred affections (as indicated above).

In thirty-eight cases I have been able to complete the histories up to date or up to the time of death. The hitherto fatal cases are seventeen in number, and of these, four were cases of pernicious anemia. The duration of life after the onset of the nervous symptoms²² was as follows:

(A) *Cases With Pernicious Anemia.*

Less than one year.....	2 cases
Between one and two years.....	1 case
Between two and three years.....	1 "

(B) *Cases Without Pernicious Anemia.*

Less than one year.....	1 case ²³
Between one and two years.....	4 cases
Between two and three years.....	5 "
Between three and five years.....	2 "
More than five years.....	1 case ²⁴

Of the patients who are still living, a good many have had symptoms for three to five years, and a few even longer.

In the analysis by Russell, Batten, and Collier (*l. c.*) the

²¹So also in some of the cases in my earlier paper, especially Case I, though not necessarily instances of pernicious anemia.

²²Subject to slight errors.

²³This patient was a woman 71 years old.

²⁴This patient had symptoms, consisting at first of paresthesia, later of ataxia and progressive weakness, for 13 years.

fatal ending was found to be the sequel of complete paraplegia. Doubtless this sequence is common, and perhaps the rule. Nevertheless, several patients²⁸ of the present series died from exhaustion or from an intercurrent disease before the paralysis had become complete.

Course of the Illness.—In the great majority of cases the patients grew worse steadily, or with trifling remissions from time to time, and this is usually true, as various other observers have noted, even when the accompanying anemia or other nutritional disorder has become temporarily less.

On the other hand, striking and prolonged remissions are sometimes seen, occurring spontaneously, though perhaps aided by treatment.

Furthermore, there is one special outlook for therapeutics which my experience shows to be of very great importance, namely, in the educational treatment of the ataxia by the method of Frenkel.

I give three outline histories to verify these important statements:

Case I.—A lady, fifty-one years of age, the patient of Dr. Henshaw, of Cambridge, to whom I am indebted for the later history, consulted me in August, 1898, on account of general lack of nervous endurance and sense of extreme exhaustion, and especially for a "stiffness," weakness and numbness of the feet and legs, and to a less degree of the hands. She had a sense of severe constriction or "tightness" down the backs of the legs and round the knees, which was particularly troublesome after she had retired for the night, and a feeling of rigidity of the muscles which was so great that walking out of doors cost her great effort. The abnormal sensations in the hands was of especial interest, from the fact that—as in other cases—their intensity varied much more than one can assume the actual neural depreciation to have varied. This patient had never been robust, though always cheerful and capable of enjoyment. She was naturally thin and spare, weighing usually about 115 pounds. Her family history seemed unimportant, and she had had four children, all of whom were said to have good health. For ten or fifteen years before her illness began she had had much cause for worry and anxiety about her

²⁸Only 4 died under my own observation, and I am dependent for information respecting the mode of death of the rest on the reports of their physicians and relatives.

domestic affairs, and this was the harder to bear from the fact that before her marriage she had been free from care and responsibility. Nine months before I saw her she had begun to have tingling in the hands, and this had continued ever since, although of late it had been less intense. The feet and legs had then become involved, and the symptoms relating to them soon became more serious than those in the hands, though at one time the latter had been so much affected that she was unable to pick up a pin without great difficulty. This pricking sensation was mainly confined to the palmar surfaces, and reached as far as the roots of the fingers. When these surfaces were rubbed it gave a feeling as if stung by nettles. The patient was put on tonic treatment, and was also recommended to Dr. R. W. Lovett in the hope that she might walk the better for careful treatment of the feet and muscles, and this proved to be the case. She improved steadily, and after about six months or less called to tell me that she felt entirely well. Unfortunately, this gain was not of long duration. After a few months the symptoms started up afresh, apparently in consequence of renewed anxiety. This time the hands were but little involved, but the legs became rapidly weaker, until very soon she was wholly paralyzed as regards both sensation and motion, and had incontinence of urine and feces. She was then transferred to the Adams Nervine Hospital, where she died some months later, two years from the beginning of the illness. During the last two or three weeks of her life her mental condition became much impaired. She would call out and even scream for persons who were perhaps in the very room, and ask to be turned in bed every few moments. In spite of the paralysis of sensation, she suffered much from discomfort which was referred to the lower extremities. There were no contractures, the paralysis being flaccid and complete. Death occurred apparently from exhaustion. No autopsy was obtained.

Case II.—Showing marked improvement under treatment for co-ordination.

The patient is a lady of thirty years, of slender build, weighing habitually only 105 to 110 pounds. She is married and has three children, two of them being twins. In connection with these confinements she had considerable uterine hemorrhage, and since the birth of the last child her health has not been as good as before. Four years ago she had jaundice for a week or two. She is of a worrying temperament, as she says her mother was before her, and has had a good deal of cause for anxiety on account of prolonged illness in her family. Her mother is of a nervous temperament, and walks, it is said, with

an ataxic gait. This difficulty in walking, it seems, began a good many years ago, but has been much worse for four years, since an attack of "rheumatic fever." Before that it was hardly noticed.

One year before her first visit to me this patient began to have blurring of the eyesight, although no error of refraction was discovered by the oculist who then examined her. This impairment of vision has continued to trouble her, so that she has difficulty in threading a needle and sometimes even in recognizing her friends as they pass on the street.

Soon after this, that is, nine months or more ago, her gait became somewhat ataxic, and at about the same time—perhaps in consequence of the impaired control—she fell and broke her arm.

At one time she had a strong sense of constriction about the thighs, midway between the knee and hip, and soon after the difficulty of walking was first observed she had a sense of numbness in the hands and arms, and some degree of actual impairment of the touch sense in the fingers; now no longer present.

On physical examination she was found to have static and motor ataxia of both upper and lower limbs, slight in the former, but strongly marked in the latter, so that it caused her serious inconvenience in walking.

Ophthalmoscopic examination showed a paleness of the disks, especially the right, the vessels standing out with undue sharpness. Vision was impaired at least one-half. The wrist, knee, and ankle reflexes were all somewhat exaggerated.

For the treatment of the ataxia, the patient was placed under carefully supervised gymnastic treatment, and although it is but three months since this was begun, the results have far exceeded my expectation. The patient has acquired a skill and confidence such that to a casual observer her gait would almost pass for normal.²⁰

I will say, in passing, that my experience in the treatment of true tabetic ataxia by this method leads me to think that it affects something more than a simple improvement in co-ordination. The paresthesias also are sometimes less complained of, and it may be that something is done toward a real arrest of the disease.

I am encouraged by this thought to recommend suitable gymnastic treatment even when no marked inco-ordination is present. The restoration of functional activity is the end to be sought at all hazards.

²⁰This patient grew worse again later, and is failing, but another in same condition has maintained her improvement for several years.

The histories of the cases followed by autopsy are given in brief in the latter portion of this article.

In glancing over these clinical histories, especially with the post-mortem findings in mind, two or three conclusions strike one as being almost inevitable. Firstly, it seems clear that we have to deal with a fairly definite form of disease, almost as definite as tabes, though with a somewhat less rich and varied symptomatology. In using the term "disease" for both these affections, we mean to imply that they represent, as it were, special "plans of cleavage," or modes of dissolution of the nervous system. Even if the morbid changes are due to a poison, nevertheless they imply, too, a definite construction, and definite liabilities of the nervous system, such as would make it react in almost the same way to a variety of (toxic?) causes.

Secondly, the question might be raised whether the progression of the disease implies the continuous action of some toxic agent. It does not seem, as a matter of fact, absolutely necessary to assume this to be true. One may imagine that if the first injury suffered by the nervous system interrupted the normal play of important functions, that very lack of functional activity itself might lead to further degeneration, and so on. To these interacting and mutually reinforcing causes of increasing decay would soon be added, of course, the unfavorable conditions of local nutrition due to the process itself acting on neighboring parts, and also the unfavorable conditions arising from the failure of general nutrition.

Finally, while we are ready to admit that the grouping suggested by Bastianelli, as well as by Russell, Batten and Collier, is useful as a working principle, and perhaps corresponds to certain real clinical and anatomical peculiarities; yet we cannot admit, with the latter authors, that the spinal degeneration attendant on pernicious anemia ought not to be classed with the chronic sub-acute degenerations such as they and we mainly describe. On the contrary, it seems to us that, whether one looks at the cases from the standpoint of the degree of the anemia, or of the duration of the spinal symptoms, or of the intensity and nature of the anatomical changes, gradations between the two groups referred to are everywhere apparent.²⁷

²⁷It is perhaps true that a loss of knee-jerks is more likely to occur early in the pernicious anemia cases.

If the spinal changes occurring in pernicious anemia do not belong in the same group with the others, the question would immediately arise where they do belong. For they, too, are certainly of toxic origin, and a study of them cannot fail to throw light on the other sub-acute degenerations of analogous character.²⁸

As regards *treatment*, we believe the essential point to be the *restoration of functional activity* so far as that is practicable, especially by graduated gymnastics.

(To be continued.)

²⁸Since the above paper was sent to press a case has come under my care which seems to me to bear out and illustrate the statement given in the text as to the relation between the spinal degeneration attendant on pernicious anemia and the subacute form associated with general cachexia or even occurring without any disorders of nutrition.

The patient is a lady sixty-nine years old, small in stature like many of the patients referred to above, and never robust, and with two daughters, of whom the same statement might be made. For ten or twelve years, that is, for a period which began apparently with the illness and death of her husband, after a distressing sickness, she has been particularly ill, though even previous to this her health had been impaired by a series of debilitating attacks of some inflammatory affection of the face, which recurred year after year. Two years ago she had an illness called the grippe, and at this time the anemia began to assume a distinctly pernicious character and the spinal symptoms also began to show themselves in the usual form of paresthesia of the fingers.

About a year ago the blood was examined by an expert pathologist, Dr. Mark W. Richardson, and unequivocal signs of pernicious anemia were found.

Except for slight and temporary improvement both sets of symptoms have been progressively increasing, so that now the patient is almost confined to the bed or chair, and presents a bloodless appearance and well marked anemic heart murmurs. The knee-jerk is absent on each side.

It will thus be seen that while the case is obviously one of pernicious anemia, the spinal symptoms have been of two years' duration while the early history of the case justifies the placing of it in the same category with a number of the others on which the statistics of the paper were based. It resembles, for example, Case IV of those reported with autopsy, although, unfortunately, in the latter, no blood examination was made during the later part of the patient's life when the anemia had become very great.

REPORT OF A CASE OF BRAIN INJURY, WITH PECULIAR
WHISTLING SPELLS FOLLOWING OPERATION.*

BY WILLIAM C. KRAUSS, M.D.,

BUFFALO, N. Y.

The following interesting case of brain injury, with consequent periods of whistling, attracted considerable attention among the daily papers at the time, and from their reports of the case it soon became evident that something extraordinary had taken place. The facts of the case are as follows:

C. M., age 27; of Polish descent; his occupation being that of herdsman in the East Buffalo stock-yards, was a powerfully built man, about six feet in height, and weighed in the neighborhood of 230 pounds. As to his habits and previous illnesses but little could be learned, save that some months previous to the accident he had suffered a stroke of apoplexy, resulting in a hemiplegia of the left side of the body. He was slowly regaining use of the left arm and leg, and was able to drive stock about the yards and across the railroad tracks.

On the morning of December 30, 1898, he was found lying along the railroad tracks, having been struck by some passing train during the night. He was sent to the Fitch Accident Hospital, in an unconscious condition, and did not regain consciousness.

On close examination at the hospital it was found that he had received three scalp wounds—one two inches long over the occiput, one two and one-half inches long over the left parietal eminence, and one two inches long over the left frontal region. There was, moreover, a depressed fracture of the skull, three inches above and one inch behind the left ear. No other important findings were noted except a few body wounds of minor importance.

He was immediately trephined, and the depressed bone removed. On removing him to his bed it was necessary to strap

*Read by title before the 26th annual meeting of the American Neurological Association, May 1-3, 1900.

his arms, as he constantly tried to remove the bandages with his right arm or waved it up and down, not resting quietly.

About ten o'clock at night he began to whistle, not, however, the "popular songs of the day," but the whistle calls he was accustomed to use in calling or driving his flocks. He would continue whistling for about one minute, then would cease for five or ten minutes, and kept this up at regular intervals until he died, January 3, 1899, at 10.30 P. M. At no time was it possible to distinguish any melody. The sounds were of the same pitch and intensity, and of the same character. They were audible throughout the ward, and attracted the attention of patients and attendants. To the physicians in attendance it was a strange experience to hear these whistle calls coming from a patient in a state of unconsciousness. It was impossible to rouse the patient at any time before or after the accident, and he died, whistling a few minutes before death. There was complete loss of control over the bladder and rectum, no increased temperature; pulse slightly lowered. He was put on milk diet, and given stimulants in abundance.

The case is an unique one, and one for which I offer no explanation. Its peculiar feature, the whistling spells, entitles it to publication, and may serve to call forth other similar cases.

BRUSH MASSAGE.

BY FRANK R. FRY, A.M., M.D.

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The use of dry bristle brushes for the purpose of massaging is a simple process, yet after more than three years' constant experience with it I can pronounce it very effective. It also has advantages in many instances over ordinary massage methods which I think warrant me in calling attention to it. It is simple and easily learned, and, therefore, in line with the modern tendency to simplify and not to elaborate any of the methods used in manipulative therapeutics, as massage, hydrotherapy, etc.; the idea being, I think, to reduce them to simple methods as far as possible, which may be comprehended in the ordinary hygienic care of the largest possible number of our patients.

As I have employed it, brush massaging consists in kneading all accessible portions of the body with brushes. The brush is kept in contact with the skin and manipulated with a combined circumductory and creeping movement, and with a varying degree of rapidity and pressure. The dry brush adheres to the skin, drawing with it the superficial structures in a way that can hardly be described, but which is readily discovered on trial. As the amplitude of the different movements depends much on the length of bristle and spring of the brush, the combined or special movement almost imparts itself to the hand of the operator, at least it is easily acquired. Specially constructed brushes are not necessary. From a good assortment of flesh brushes one may always select suitable ones for this purpose. I generally find well-made, leather-back ones the most acceptable. Working regularly with this method the operator soon understands how to graduate it to patients of greater or less sensitiveness, and when to use a soft and when a firm brush. Of course the attending physician should retain an intelligent surveillance; something, by the way, which many of us too often fail to do in placing patients in the hands of masseurs and the like.

It is almost uniformly acceptable to patients, we may say always so when cautiously begun and from day to day increased in force, with a soft, pliable brush to begin with and a more severe one later on. The rapidity with which the skin and muscles gain a tolerance will, I think, surprise those who have not witnessed it. In some instances it has seemed to me almost wonderful. And it is very gratifying indeed to the patients to remark this rapidly increasing capacity on their part to endure a good rubbing of this kind.

One of the advantages of this method to me has been that I have had no trouble in obtaining operators whom I could control and trust, and at the same time bring the benefits of the treatment within the financial range of persons of moderate means. Not infrequently some member of a patient's family gives the daily rub in an efficient manner, after being instructed by some proficient person. This is a great advantage in chronic cases when the continuous employment of massage talent would become a serious drain upon a slender exchequer. On the other hand, a dainty operator with a display of nice looking brushes and a skillful use of them can furnish a seance of thirty to sixty minutes quite to the taste of our most fastidious class of lady lovers of massage. Trained nurse pupils I have found to acquire the process most readily. In one institution in which I have had most of my sanitarium cases in the past three years the nurses have made the brush rubs popular by the excellent manner of administering them. As a rule they like to continue the use of them when they get out into private work, because they notice the beneficial and gratifying effects to their patients.

The method is effectual in the heaviest work for which massage is employed. Several capable and experienced masseuses have found much satisfaction in using the brush in the manner here described, and have told me that they liked it especially in the heaviest work, as, for instance, in reducing fat subjects. On the other hand, when the most gentle manipulations are required, I have been equally pleased with it, for example, in several cases of torticollis and other tics, certain

cases of tabes which could not tolerate ordinary massage, neuralgias, neuritis, etc.

It is an excellent means of relieving lithemic and neurasthenic aches and pains of all descriptions, and especially the neck and back paresthesias, which torment this class of subjects. It is a good daily exercise for the ordinary run of neurasthenics, many using the dry brush upon themselves daily when not situated to have the rub from other hands, which is always much preferable.

It is hardly necessary that I should even briefly indicate the range of cases to which the brush massage is applicable, especially in mentioning it to neurological practitioners, to whom this communication is more particularly addressed, and whom I should like to find employing it, believing they will, in a measure at least, share my own experience with it.

NEW YORK NEUROLOGICAL SOCIETY.

October 2, 1900.

Dr. J. Arthur Booth in the chair.

PERIODICAL PSYCHOSES.

Dr A. B. Defendorf read this paper. He said that years ago all forms of insanity were looked upon as more or less periodical, but gradually this list had been reduced to periodical mania and periodical melancholia. The English and American observers have been slow to recognize periodical insanity. The records of hospitals for the insane show it to constitute a not inconsiderable percentage of cases admitted, coming second to dementia præcox. These cases are characterized by intense psychomotor restlessness, yet they exhibit no signs of fatigue after weeks or months of excessive motion. One of the striking features of this form is that consciousness continues unclouded. In the extreme maniacal condition called delirious mania their consciousness of surroundings does become clouded. These patients are rich in words if not in ideas. Delusions when present are transitory, and are usually of the expansive type. They are happy and contented, yet they change very suddenly from happiness to melancholia or *vice versa*. In the depressive form, the associations of ideas show retardation, and the emotional attitude is uniformly one of depression or despair. More or less stable delusions are present. Cases would be found showing both the maniacal and depressive elements, but usually one or the other predominates. The most prominent etiological factor is defective heredity, it being found in from 70 to 80 per cent. Other causes are shock, acute diseases and mental strain. Where the first attack occurs after childbirth it is likely to recur with each succeeding confinement, and continue after the climacteric. The first attack is likely to be of the depressive form. More than half of the cases occur before the age of twenty-five. As the attacks are repeated the lucid intervals tend to shorten. During these intervals the mental faculties are fully retained. The prognosis of the psychoses is bad. During the height of the disease, or in the extremely maniacal or depressive forms, death may occur from exhaustion, or may be self-inflicted. The author's conclusions were: (1) Periodical insanity is characterized by a definite symptomatology, which permits of differentiation in the first attack; it is a prominent psychosis.

Dr. B. Sachs said that while all recognized that there was such a thing as periodical insanity, there was danger lurking in the term,

because almost all forms of mental phenomena are apt to exhibit a tendency to recurrence. For this reason it should be insisted that there must be a regular recurrence, for instance, of mania and depression with perhaps a lucid interval. It was rather curious that those describing periodical insanity insist that there must be marked depression. He could recall a case of distinct hypochondriasis followed by a lucid interval of seven years and then an attack of pronounced melancholia. There was again a lucid interval followed by an attack of mania. Attention was called to the remarkable suddenness with which the patient passes from one state to another. He had had under observation a girl who had been in a state of depression for over eight months, and then very suddenly had had a lucid interval lasting one year. This had in turn been followed by acute mania.

Dr. W. D. Granger said that a few cases of undoubted circular insanity were so decided in their symptoms that they could not be mistaken for anything else. This was particularly true if the person was seen late in life, and had a history of recurrent attacks extending over many years. There were, however, many cases less pronounced in type, rendering it difficult to classify them. He had personally seen only a few cases of circular insanity. He had never seen the sudden changes referred to by the last speaker, nor had he ever seen a case of true incoherence in connection with circular insanity. He had seen several cases of recurrent insanity in which there would be from two to five attacks of rather mild melancholia. He had had a young lady suffering from this form of insanity, and also her mother, brother and sister. The sister had had a most violent mania, proved at autopsy to have been a complication of typhoid fever. She had had periodical attacks of active, though not violent, mania. Another form of the circular type that he had noticed, and had never seen described in the text-books, was the form of chronic mania developing in the last few years of life, recurrent attacks of mania and melancholia.

Dr. William H. Thomson said that he had had under his continuous observation for ten years a case of periodical insanity, and probably the only one to which he would be willing to apply the term periodical insanity. The attacks had recurred regularly every other day all these years. The patient was a man, forty-eight years of age, when the disease had first set in. There was no hereditary psychosis. At the beginning he had been attacked with melancholia, and had attempted suicide. Attention had been early directed to the fact that his condition was worse every other day, and for this reason he had had most thorough and persistent antimalarial treatment. When first seen by the speaker, his memory had been good, and he had been in no way irrational. The temperature had been normal. The next day his temperature had risen to 101° F., and he had become delirious. On the following day his condition was that noted at the first visit. The febrile symptoms had ceased after about three months, but in other respects the case had kept up this alternation ever since that time. Examination of his secretions had thrown no light whatever on the etiology of his singular mental disturbance. The type was that of melancholia with excitement. He had never been truly maniacal. Regarding periodical psychoses in general, Dr. Thomson said he could not agree with the reader of the paper that they constituted such a definite class, for if so they should be definitely periodical. Another case was then cited, in which the attacks had begun with talkativeness and an appearance of well-being, which would last

for about six weeks, and would be followed by extreme mental depression. At no time was there any confusion of personality or any delusions. The attacks of mental paresis would last two or three months, and would usually come on every winter. Such a case seemed to him a true example of periodical psychosis, but many of those described in the paper seemed to him to come rather under the head of relapsing than periodical insanity.

Dr. William M. Leszynsky said that no one could tell at the first attack whether there would be recurrence or not. With a good previous history it was an entirely different matter.

Dr. L. Pierce Clark said that while in a hospital for insane he had seen a case of intermittent mental stupor which recurred at short and fairly regular intervals, thus resembling, in some respects, the case reported by Dr. Thomson. Such cases were very rare, only six being on record. Sudden transitions were quite characteristic in the mental disorder first described by Charcot in connection with mental epilepsy.

Dr. Defendorf said that the periodicity was the characteristic of the whole course of the disease throughout the life of the individual, and it was certainly an irregular periodicity. But there were certain fundamental symptoms, such as the condition of the memory, the tendency towards deterioration, and in the character of the delusions and hallucinations upon which the diagnosis should be founded. Relative to the sudden transitions from one state to another, he said that this occasionally happened, sometimes over night.

STATUS EPILEPTICUS; ITS NATURE AND PATHOLOGY.

Drs. L. P. Clark and T. P. Prout presented this paper, Dr. Clark reading the clinical portion. About forty-five cases formed the basis of the paper. Unfortunately only five cases could be studied histo-pathologically. The modern notion of status is that it is the acme or true climax of the disease, and not, as formerly supposed, a chance termination of epilepsy that by proper treatment could have been avoided. It is a state of epilepsy in which one seizure follows another so closely that the previous psychical exhaustion is not recovered from. One patient at the Craig Colony for Epileptics had 384 typical psychic seizures in one day. Status occurs with about equal frequency in all the different forms of epilepsy, except that dependent upon organic brain disease. The latter constitutes one-half of all the cases of status. Exhaustion-paralysis is very characteristic of status. No foundation had been found for the statements of some writers that either age or sex exerts any influence. According to their experience, the shortest intervals had been in those developing their epilepsy between the age of ten and sixteen years. On an average, eleven years elapse between the beginning of the epilepsy and the occurrence of status. Menstruation in women does not seem to be productive of status. In the great majority of cases the approach of status is denoted by a steady increase

in the frequency of the epileptic seizures. They had seen 300 attacks a day in several cases, and still recovery had occurred. One case had had status epilepticus for twelve days, and had recovered, having had during this time 1,800 seizures. The temperature elevation in status usually begins after the first severe convulsion, and there is usually a direct ratio between the number and severity of the convulsions and the elevation of temperature. The record of the pulse, temperature and frequency of respiration gives the best indication of the severity of the status. Generally the maximum of the fever marks the maximum of the seizures, and if the fever persists after this, one should be led to suspect some complication. Occasionally the fever subsides by crisis. Occasionally also the temperature rises to 107° or 108° F. As to the cause of the fever curve, he said that some look upon the elevation of temperature as purely psychical, while others believe it is the result of a direct effect on the heat center. The pulse rate increases in frequency with each attack, but the pulse curve usually runs nearly parallel to the temperature curve, though responding more slowly on recovery from status. Almost always there is Cheyne-Stokes respiration, but it is not so unfavorable a symptom as in some other disorders. Both pneumonia and pleurisy are fairly frequent complications. The prognosis of status is necessarily grave. A low temperature is supposed to be a fair sign, though there may be recovery after a temperature of 107.5° F. Paralysis of the muscles of deglutition is a very unfavorable sign. The gradual, steady increase in the symptoms is the most unfavorable sign of all. Many patients have a record of two to five status periods, and it is probable that the mortality does not exceed 25 per cent. It is possible to abort a case of status if taken in time, and certainly the present mortality should be reduced. The plan of treatment pursued in the cases mentioned in the paper was as follows: At the outset the patient was given a dose composed of twenty-five grains of bromide, twenty grains of chloral and a large dose of opium and morphine. If the convulsions were not controlled, thirty or forty grains of chloral were given by the rectum, and if this was not sufficient, bromide was given hypodermically in a part of the body that would be the least painful if abscesses formed, as they often do after such injections. The injections are very painful and should only be given in the stuporous stage. They usually control the condition.

Dr. Prout then took up the pathological side of the subject. He said that the modern belief was that the epileptic

storm has its seat in the cortex. Recent experimental research seemed to warrant the following conclusions: (1) That the transmission of the impulse in epilepsy is through the extra-pyramidal tracts which transmit motor reflex impulses; (2) that the sensory portions must be irritated in order to produce the fit, and (3) the fit appears to be a complex reflex phenomenon. The paper was founded on a study of thirteen cases. In all but two the post-mortem examination was made within seven hours after death. The changes found in the brain are by far the most pronounced in the status cases. The degree of chromatolysis seems to depend upon the number and severity of the convulsions. In the cells of the second layer the nucleus is swollen markedly, the nuclear membrane is hazy and indistinct, and the nucleolus is frequently replaced by a granular mass. These are especially numerous in the status cases. Many nucleoli were found far removed from the cells to which they belonged. He had examined the normal human brain with regard to this nucleolar extrusion, and had found it comparatively infrequent. Leucocytes clinging to degenerated nerve cells were also very frequently observed. The neuroglia was studied in seven cases, and the conditions found varied a good deal. A broadening of the outer cortical layer was fairly constant, and occurred apparently at the expense of the cortical layer. The condition of the neuroglia seemed to depend largely upon the condition of the epilepsy. It was more pronounced in the insane epileptic than in cases of simple epilepsy. When morbid processes attack the nucleus, the vitality of the cell itself is endangered. The increase in the neuroglia is the result of nerve-cell destruction. The author's conclusions were: (1) It would seem that epilepsy is essentially a sensory phenomenon; (2) the essential lesion pertains to the nucleus of the cortical cells and jeopardizes the cell; (3) the chromatolysis is probably a nutritional change brought about by the jeopardization of the nucleus; (4) the rôle of the leucocyte in the cortex after severe convulsions is most probably that of the phagocyte; (5) the neuroglia proliferation in epilepsy is one of the more remote consequences, and (6) epilepsy is progressive disease of which status is the climax.

Dr. Schlapp said that he had had occasion to treat two cases of status the past summer, and both had recovered. One case had had thirty attacks in eight hours. She had then become stupid and had finally developed hallucinations, the whole condition lasting two weeks. In both of the cases there was such a large quantity of albumin in the urine that the latter became solid on boiling. He thought this condition was commonly present in status. He did not think it was right to assume that the second or third layer of cells

could be taken as sensory cells, so much depended upon the particular region of the brain. Most of these cells were now looked upon as association cells, thus opposing the theory of Bruce.

Dr. Defendori asked regarding the temperature of the patient dying in status. He had had an opportunity of studying two cases, and in both there had been what had been called "acute alteration." This was often found in other conditions, particularly where there had been high temperature.

Dr. Sachs asked whether in these cases of status epilepticus gross changes had been found that might, in some way, have been accountable for these cell changes. A number of years ago he had examined the brain of a child dying in status, and the one condition found at that time had been a very large subpial hemorrhage, covering almost the entire brain. He would like to know whether in the brains examined by Dr. Prout similar conditions had been found. If they had, it did not seem to him fair to determine the true pathology of epilepsy from patients who have died in status. A truer knowledge of this pathology should be obtained from a study of the brains that had not undergone such secondary changes. The plates exhibited showed cellular changes such as had been reported in a number of very widely different diseases of the brain.

Dr. Schlapp said that he had seen recently a case presenting hemorrhages throughout all the membranes.

Dr. Leszynsky said that fifteen years or more ago he had published a paper entitled, "Epilepsy as a Cause of Death." In every one of the cases coming to autopsy there had been intense venous stasis, and in some a few small hemorrhages. One or two of these patients died within two hours, and one after a single convulsion. A very competent pathologist had made the autopsies. At that time the most successful method of treatment of these cases had been early venesection, and he had seen no reason to change his view regarding the efficacy of this treatment. The injection of chloral into the rectum was certainly very satisfactory. He had practised venesection because of the intense venous stasis, not only found at autopsy, but seen in the face of the patient.

Dr. L. P. Clark said that albuminuria had been frequently observed in the cases that they had studied, yet the degree had varied greatly, and had not been at all in proportion to the severity of the seizures. In most of their cases there had been no systematized delusions present, and the delirium had resembled that of typhoid. A very large number of gross lesions had been found as the result of the severity of the convulsions. He had seen intense venous engorgement and hemorrhages, though sometimes these had been absent in very severe cases of status.

Dr. Prout, in closing, said he did not wish to be understood as saying that the invasion of the cortex with leucocytes is characteristic of epilepsy. It was well known that such an invasion was marked in general paresis. He had only mentioned the fact as showing that the leucocyte was carrying off effete material. In speaking of the cells of the second layer, he had referred to them as sensory in contradistinction to those which we are accustomed to associate with motor phenomena. He did not think it had been conclusively shown that these cells are associational in character. Many of the sections figured in the plates show the presence of punctate hemorrhages.

PHILADELPHIA NEUROLOGICAL SOCIETY.

October 22, 1900.

The President, Dr. William G. Spiller, in the chair.

A CASE OF PROBABLE CEREBELLAR TUMOR.

Dr. David Riesman presented a patient, a married man forty years of age, by occupation originally a forester, but now a tailor, without neuropathic family history. Venereal infection is denied. There is no history of injury, nor of the abuse of alcohol or tobacco.

Nine years previously, after much exposure, the man began to suffer from severe headache, which lasted a year and a half, and was finally relieved by a remedy that appears to have been iodide of potassium. Five years ago a subjective vertigo developed, which of late has become intensified, so that on several occasions he has fallen, whether to any particular side he does not know. Vision is good, but at times he sees double. Since the beginning of the vertigo there has also been difficulty in walking, the gait being staggering to such an extent that he has frequently been accused of intoxication. Two years ago difficulty in walking developed.

He has never vomited. Headache is rare; when it occurs, it is occipital. Intelligence and memory are unimpaired. The left side of the trunk and left leg are a little numb, and the occasional seat of pricking sensations. Sexual power is greatly diminished. On percussion the skull is tender along the lambdoid suture and over the occipital bone. The pulse is persistently rapid. There is a well-marked lateral, and to a less extent oblique, nystagmus. The pupils are equal and react promptly to light, and there is no ocular palsy. Examination of the eye-grounds shows some atrophy of the optic nerve. Hearing is much impaired on the left side. Motion of the soft palate is somewhat imperfect, but there is not a complete paralysis. There is no ataxia of the arms whatever, nor any loss of power. The gait is reeling in character; the feet are not lifted high, as they are in locomotor ataxia. He sways a little on standing with closed eyes, and cannot walk with the eyes closed; when urged to do so he lists toward the right. He has to rely very strongly upon the balancing action of his arms, and on that account cannot carry anything in his hands without causing his gait to become more staggering. He can stand on either leg for a few moments without much difficulty. There is no ataxia of the legs whatever in the recumbent posture, and the knee-heel test is executed

without difficulty. When lying down the vertigo disappears. There is no impairment of power in the lower extremities. The knee-jerks are both exaggerated. Ankle-clonus is inconstantly present. The plantar reflexes are present; the cremaster and abdominal reflexes absent. The sphincters are undisturbed. Sensation is good everywhere except in the left leg and in the left side of the trunk up to the costal border in front and to the neck behind. In these places there is slight hypesthesia, both for touch and for heat and cold. There is no curvature of the spine, nor any tenderness. Electric examination shows that the left side can bear a stronger current than the right; the muscles respond properly.

Dr. Riesman thought that the vertigo and reeling gait in this patient are suggestive of a cerebellar lesion—one involving the middle lobe. The lesion must be small, as the signs of pressure are not marked. The numbness of the left side is not easily explained. There might be pressure upon the sensory tracts of the medulla or on portions of the cerebellum through which afferent fibers pass from the direct cerebellar tract or from parts of the posterior columns and the antero-lateral ground bundles. The differential diagnosis between tumors of the prefrontal region and of the cerebellum is difficult. The absence of all mental impairment is in favor of the cerebellar lesion, although by no means conclusive. A tumor in the mid-brain region, involving the quadrigeminal bodies, might produce many, if not all of the symptoms present in the patient; but the ocular, and perhaps the auditory, symptoms would be more pronounced if the tumor sprang from this region. On these grounds the lesion is believed to be in the cerebellum.

As to the nature of the lesion, it is possible that the man had a gumma, which subsided and left a cicatricial process in its place. The absence of specific history, as is well known, does not exclude the existence of this disease. On the other hand, iodides often cause improvement, even in the absence of syphilis, so that the nature of the lesion must be left undecided.

Dr. F. X. Dercum agreed with the speaker that this probably was a case of cerebellar disease, but he thought it doubtful that the lesion could be attributed to a specific cause. It is well known that cases of cystic glioma often get better under the use of the iodides. He, however, thought that in this case the nature of the lesion was a secondary matter.

Dr. Spiller asked whether Dr. Riesman had taken into consideration the possibility of internal hydrocephalus and of disseminated sclerosis; and also whether the patient had had vertigo more intense when lying on one side or the other. Dr. Spiller had had a patient

with symptoms of cerebellar tumor, who had intense vertigo when lying on the left side. Shortly after this two similar cases were reported by Schmidt. In Schmidt's cases necropsy showed the tumor to be on the opposite side from that the lying on which occasioned the vertigo.

Dr. David Riesman said that his patient had no vertigo on lying down. He had considered disseminated sclerosis, but in the absence of intention tremor, scanning speech, and impairment of power, he had felt warranted in excluding this. He did not see how it was possible to differentiate in adults between internal hydrocephalus and cerebellar growth. A number of cases had been reported in which operation was done for tumor and internal hydrocephalus was found. In regard to the nature of the lesion, he did not wish to assert positively that it was syphilitic. It might be a sclerotic or a cystic process.

A CASE OF MULTIPLE NEURITIS OF THE UPPER LIMBS, POSSIBLY THE RESULT OF HYDRO-FLUORIC ACID POISONING.

Dr. W. G. Spiller presented a man, aged fifty-eight years, who had been perfectly healthy until last March, when he worked two days in a glass manufactory with some acid, the name of which he did not know. Another man who worked with him, and who was better informed of the danger of the occupation, wore rubber gloves. The patient's hands, especially the right, came in contact with the acid. Dr. Lupin had seen him when the neuritis first developed, and at that time the hands were swollen, hard and white, and were without sensation. When the patient was seen by Dr. Spiller in August, 1900, right-sided musculo-spiral palsy was present, and the right hand could not be raised at the wrist. Sensation for pain and touch was normal on the palmar and dorsal aspects of each hand. The flexion of the right hand was very feeble. Resistance to passive movement at the right elbow and right shoulder was good. The right hand and forearm were painful on slight pressure. Flexion of the left hand was good, and extension of the hand was better than that of the right hand, but was very much impaired. Tenderness to slight pressure was felt in the left forearm and hand. At a later examination the electrical reactions of the extensors on the right forearm were quantitatively diminished. No signs of implication of the lower limbs were found.

Dr. Spiller regarded the case as one of polyneuritis caused by the local contact of some acid, *possibly* hydro-fluoric.

Dr. F. Savary Pearce said that the atypical distribution of the palsy, and the fact that the right hand was more markedly affected, reminded him of a case of lead palsy seen in the Medico-Chirurgical Hospital. He at first thought that it was a case of pressure paralysis,

but more careful examination showed the blue line on the gums. The man was a painter. The palsy was localized chiefly in the right arm. The middle finger of the left hand was involved, and the grasp of the left hand was lessened. Perhaps in neuritis the result of poisons from without, the overworked peripheral neurones usually in the right arm, are earliest made vulnerable to the toxic substance.

Dr. A. A. Eshner suggested that as hydrofluoric acid is volatile, there was a possibility that the poison had been absorbed through the respiratory tract. In a case of this kind one would expect to find a constitutional rather than local manifestations. It has been stated that in some cases of lead-poisoning the toxic agent has been absorbed through the respiratory tract. The late Dr. Da Costa* reported a case of hemiplegia which he attributed to lead-poisoning after exposure for only three days in a freshly painted house.

Dr. Simon Flexner remarked that the suggestion of Dr. Eshner was supported by what is known of poisoning from arsenical wall papers. The arsenic is converted through the agency of fungi into arseniuretted hydrogen, which is absorbed by the respiratory tract, causing the poisonous effects.

Dr. James Hendrie Lloyd considered the fact that this was a case of local poisoning a point of special interest, as most cases of neuritis are due to poisons ingested. In this case there appears to be only a local effect. Some years ago Manouvriez, a French observer, called attention to what he considered "local saturnism"—an affection characterized by local symptoms due to the external application of lead. In quite a large number of cases the local effects corresponded to the local application of lead to the skin. Some workmen, for instance, had used their feet to stamp lead, and had loss of power in the legs. Anesthesia has been known to occur in an area upon which lead had been applied.

Dr. Hobart A. Hare thought that in this case the diagnosis of peripheral neuritis had better basis than the diagnosis of the cause. He thought that the evidence of its being due to hydrofluoric acid was not conclusive. Nothing is known of the effect of this acid on the nerves. This might be a case of pressure palsy.

Dr. William G. Spiller said that he had not asserted positively that the palsy was due to hydrofluoric acid poisoning, but that this was probably the cause. The man's hands were exposed to some acid for two days, and it was said that men engaged in the same manufactory often became ill. The patient had used his right hand principally in working with the acid. If the poison had been absorbed by the lungs, we might expect that the lower limbs would also have been affected, although they could have escaped. The physician who saw the case in its acute stage said that the hands were swollen, hard and white, and without sensation.

A CASE OF PROGRESSIVE, ASCENDING, UNILATERAL PARALYSIS.

Dr. Wm. G. Spiller presented a man, forty-one years of age, a peddler by trade, without venereal disease, who four years ago while peddling became gradually weak in his left lower limb, and it was not until a year later that he experienced any weakness in the left upper limb. The man was

*Trans. College of Physicians, 1897. p. 1.

very positive in regard to this statement. This weakness has persisted until the present time. He was never unconscious and had never had convulsions, diplopia, headache or vomiting. His station was good. The muscles of the left lower limb were spastic, and in walking the toes of the left foot were inverted. The right knee-jerk was prompt, but the left was still more so, and ankle-clonus and Babinski's reflex were obtained on the left side. The left upper limb was held slightly flexed, but could be voluntarily extended, and the tendon reflexes in the left upper limb were exaggerated. Von Bechterew's scapulo-humeral reflex was very distinct on the left side. Sensation and muscular development were normal everywhere. The movements of the face on the left side were somewhat impaired. The man was paretic on the left side, but still had very fair use of the left extremities. The reactions to the electrical currents were normal. Dr. H. F. Hansell had made an ophthalmoscopic examination: "In the right eye the media were clear, the fundus was normal, and myopia 3 D. existed. In the left eye the media were clear, the arteries were small and the veins normal. The edges of the disc were distinct. The nerve head was white, the atrophy being probably spinal in origin, as there was no indication of a previous neuritis. Myopia 6 D. existed. Reaction of pupil normal."

Dr. Spiller referred to a similar case reported before the Society about a year ago, by Dr. C. K. Mills, in which an unilateral degeneration of the pyramidal tract was believed to be the cause of the clinical phenomena. Such a diagnosis would apply equally well to Dr. Spiller's case, although a degeneration of this kind has never been seen. The lesions that could produce such a symptom-complex were carefully considered.

Dr. Charles K. Mills said that the report of this case confirmed him in the view that such cases represent a new form of disease; that is, so far as the recording of cases is concerned. When the patient had reached the stage that this one had, he presented many of the symptoms of ordinary hemiplegia from focal lesion.

BELL'S PALSY, WITH ANESTHESIA IN THE DISTRIBUTION OF THE FIFTH NERVE ON THE SAME SIDE OF THE FACE.

Dr. James Hendrie Lloyd showed a patient with Bell's palsy in whom there was complete anesthesia in the territory of the fifth nerve, without paralysis of the motor branch. The case had occurred suddenly after exposure to cold. There had been a great deal of pain at first, with some stiffness of

the neck muscles and retraction of the head. The symptoms had already persisted for three months, although the paralysis of the facial nerve had greatly improved. The association of these two nerves in a paralysis without marked intra-cranial symptoms was unusual. The persistence of the anesthesia and its limitation to the territory of the fifth nerve indicated an organic lesion, while, on the other hand, the escape of the motor branch of the fifth nerve was rather against such a diagnosis. The patient had had several hysterical crises, and this fact suggested the possibility of the anesthesia being hysterical. The Bell's palsy, however, was unmistakably due to an inflammation of the seventh nerve.

Dr. Charles K. Mills thought that while the case was one of hysteria, it was not impossible that there was a conjoined rheumatoid inflammation of the sensory branches of the fifth and seventh nerves. The history would indicate such a possibility.

Dr. D. J. McCarthy had observed that in Bell's palsy the exit points of the fifth nerve are often sensitive to pressure. In Dr. Lloyd's case there had been no sensitiveness over these points. This he thought was against the rheumatic origin of the affection. The permanency of the anesthesia over the fifth nerve distribution could be explained by the permanency of the palsy on one side of the face. The patient's attention being fixed on the palsy would tend to keep the sensory disturbance confined to the same side, and the anesthesia he regarded as probably hysterical in character.

Dr. David Riesman expressed the opinion that the absence of trophic changes was a point in favor of the functional origin of the condition. If the anesthesia were organic, one would expect to find changes in the cornea after three months, especially in view of the fact that the eye was unprotected by reason of the facial palsy.

Dr. Lloyd said in conclusion that a careful observation of the case had led him to the opinion that we had here simply an interesting example of hysterical anesthesia, complicating seventh nerve paralysis.

BILATERAL FACIAL PALSY WITH HEMIPLEGIA.

Dr. C. S. Potts presented a case of hemiplegia involving the left side, including the face, with paralysis of all the muscles supplied by the seventh nerve upon the right side, and associated movements of the muscles about the mouth in the right side when attempts were made to close the eye or wrinkle the forehead on the same side.

The previous history of the patient was uncertain. He said he had had syphilis, the initial lesion appearing about three months before the onset of the present symptoms, which was two years ago. The paralysis of the right side of the face occurred first.

When admitted to the hospital there was marked weakness of the left arm and leg, with contractures; the angle of

the mouth was drawn to the right and the tongue was projected to the left. After being in the hospital a few weeks the mouth was drawn to the left, as it is at present. The tendon jerks on the left side were increased, and testing the plantar reflex caused marked extension of the great toe. There was inability to wrinkle the forehead and to completely close the eye on the *right* side. The mouth could not be drawn voluntarily to either side, but when he smiled it was markedly drawn to the left. The electrical reactions on the left side were normal, but on the right side of the face there were reactions of degeneration. There was no involvement of other muscles, and no sensory paralysis.

When the patient attempted to close the *right* eye or wrinkle the *right* side of the forehead the mouth was drawn markedly to the right. The explanation of this phenomenon seems to Dr. Potts to be as follows: There is a partial but not complete interference with the functions of the seventh nerve on the right side; there is also weakness of the muscles controlling the mouth on the left side. When the patient attempts to close the right eye or wrinkle the right side of the forehead the cortical centers emit stronger impulses than normal in their efforts to overcome the resistance to their passage in the diseased seventh nerve. These impulses are transmitted to the muscles about the mouth which are deprived of the antagonistic action of the muscles on the left side, they being also paretic, and contraction of these muscles on the right side results.

Dr. Wharton Sinkler remarked that this contraction of the lower facial muscles on attempting to close the eye was not infrequently seen in Bell's palsy of long standing, in which, after recovery of the power of motion, there is secondary contraction. He had at present under observation a young woman who had apparently recovered from an attack of facial paralysis, but when she attempts to close the eye the face is drawn over to the side that was paralyzed.

Dr. William G. Spiller said that the explanation given by Dr. Potts was that advanced for associated movements in hemiplegia. In Dr. Potts' case the associated movements occurred after injury of the peripheral neurones, whereas in cerebral hemiplegia the lesion is in the central neurones.

UNUSUAL TRAUMA WITH SECONDARY BELL'S PALSY.

Dr. F. Savary Pearce reported an unusual case of facial palsy. A young woman had come to Dr. Le Cates for treatment, with a jagged wound back of the right ear between the mastoid process of the temporal bone and the ramus of the inferior maxilla. From this open wound there was a discharge of fetid, sanguineous pus. The girl complained of

severe pain about the right ear, radiating especially toward the lower jaw. She had also marked constitutional symptoms: severe frontal headache, fever, etc. She had been a peacemaker in a quarrel, but persisted that she had felt nothing penetrate the wound she had received at the time she had taken part in the quarrel. The wound was probed, but nothing could be detected. In spite of careful antiseptic treatment the pain, tenderness and constitutional symptoms of fever and irritable heart action continued. One week later operation under ether revealed nothing, so singularly had the offending body been concealed in the deeper structures of this part of the infra-cranial region. A singular phenomenon was the sense of odor of tobacco that the patient complained of constantly from the date of the accident.

About two weeks after the date of injury an operation revealed a piece of an old pipe, the tip of a pipe that undoubtedly had been in the possession of one of the combatants. This body was pyramidal in shape, quite blunt, and measured one-quarter inch in circumference at the smaller end, three-eighths inch at the larger end, and was an inch and a quarter long. It appeared to be made of bone, and had at one time a strong odor of tobacco. The wound, after removal of this foreign body, healed promptly, and the patient says the odor of tobacco at once disappeared.

About July 13, ten days after she had been discharged, and over three weeks after the injury had been inflicted, she reported complaining of the tears flowing over the cheek from the right eye. She was referred to the dispensary for nervous diseases September 1. She had complete paralysis of the right seventh nerve; the face was drawn to left, and she could not wrinkle the right brow nor close the right eye. There was no involvement of sensation or hearing, taste was normal, and the tongue was protruded straight. By October 4, 1900, there was still very marked seventh nerve palsy. The galvanic reaction was as follows:

{	R. 7th nerve.	{	AnCl C=6 m. a.
		{	KCl C=8 m. a.
{	L. 7th nerve	{	AnCl C=4 m. a.
		{	KCl C=3 m. a.

She steadily improved from galvanism employed three times a week.

The question of whether this patient could have been suffering from nicotine poisoning was worthy of mention. Dr. Pearce thought that such a filthy pipe stem could contain enough of the drug to cause poisoning, and that the neuritis

of the facial nerve probably was caused in this way rather than by direct trauma. The seventh nerve was not severed, and probably not injured at the time of extraction of the pipe stem. He thought also that the odor of tobacco perceived by the patient might be accounted for by the circulation carrying a solution of the tobacco to the olfactory centers, as Dr. Gleason had been unable to find in the pharynx any wound that was probably the result of a penetration of the pipe stem into the pharynx.

Dr. Van Epps read a paper on the Babinski reflex:

Dr. Frederick A. Packard said he had investigated the Babinski reflex in children between the ages of three months and twelve years in the Children's Hospital. In children under the age of five years almost any kind of reflex could be obtained at different times and by holding the leg in various positions. The reflex often varied at the same sitting, according to the direction in which the stroke was made. He had concluded that in children no variation of the plantar reflex was of the slightest diagnostic value. The position of the limb made a great difference in the results and, as Collier insists, all the muscles should be relaxed.

Dr. D. J. McCarthy said that Babinski recommended the relaxation of the leg and the holding of the ankle rigid. The results varied according to the method of procedure. Dr. McCarthy referred to a case of spinal tumor in which the limbs had become so rigid that the knee-jerk could not be obtained, yet the Babinski reflex was present.

Dr. William G. Spiller said that Babinski was not so radical in his statements as some who had written on the subject. The Babinski reflex does not necessarily indicate degeneration of the pyramidal tract, and may be present when the function of this tract is impaired. Two cases reported by Babinski show the importance of this sign, if his diagnosis is accepted. There was loss of the Achilles-tendon jerk and the Babinski reflex was present. He therefore concluded that these were cases of combined systemic disease. The lost Achilles-tendon jerk indicated involvement of the posterior columns, and the Babinski reflex indicated disturbance of the lateral columns.

Dr. Spiller was interested in the report of one of Dr. Van Epps' cases in which the knee-jerk was lost in hemiplegia and the Babinski reflex was present, and the patient died within four days. He had observed two similar cases and thought that when this combination was present the prognosis was more serious.

Hyper-extension of the big toe occurs in Friedreich's ataxia. This may be due to a condition similar to that producing the Babinski reflex. Dr. Spiller had found this hyperextension in a case of infantile cerebral hemiplegia, and he thought that the relation of permanent hyperextension of the big toe to the Babinski phenomenon would afford an interesting study.

Dr. Spiller had had a case with the symptoms of myelitis in which there was loss of the knee-jerk, loss of the tendo-Achillis jerk, and presence of the Babinski reflex. He thought that in this case a lesion was present in the lumbar and upper sacral portions of the cord.

Periscope.

CLINICAL NEUROLOGY.

LES MERES ET ALCOOL (Mothers and Alcohol). Maurice Nicloux (L'Obstetrique, March 15, 1900).

The author reports an extensive series of experiments with the following conclusions: Ingested alcohol passes from the mother to the fetus and into her milk, the proportion in the blood of the fetus and in the milk being about the same as in the blood of the mother. Therefore the nervous condition, drunkenness, anesthesia, etc., of the drinking mother must indicate a marked toxicity in the infant, and the whole baneful influence of alcohol upon the tissues is exerted during their process of formation, with especial injury to the nervous system.

JELLIFFE.

DIE URSACHE DES NEURASTHENIE (The Origin of Neurasthenia). L. Höflmayr (Deutsch. Archiv. f. klin. Med., Vol. 66, Dec. 13, 1899, p. 492).

The author is not satisfied that neurasthenia is a form of nerve fatigue, and does not believe that severe nervous exertion produces a chronic effect in healthy persons, any more than a severe physical exertion does. He calls attention to the fact that epidemics of neurasthenia are not common after arduous campaigns, although, if the current theories are accepted, they certainly should be. He therefore falls back upon the auto-intoxication theory, believing that there are two sources from which the poison may be derived; either from the respiratory tract as a result of imperfect exchange of the gases, and he instances in proof of this the readiness with which neurasthenics become fatigued in impure air; or from the gastro-intestinal tract, as the result of the formation of poisons during fermentation of the food. SAILER.

UEBRE EINE NEUE FORM HEREDITÄREN NERVENLEIDENS (SCHWACHSINN MIT ZITTERN UND SPRACHSTÖRUNG (A New Form of Hereditary Nervous Disease—Feeble Mentality with Tremor and Disturbance of Speech). O. Giese (Deutsche Zeitschrift für Nervenheilkunde, Vol. 17, Nos. 1 and 2, p. 71).

Giese describes a peculiar form of family disease that cannot be easily classified. In two children, brother and sister, who had no hereditary tendency to nervous disease, but were somewhat feeble mentally, a peculiar group of symptoms gradually developed during the period of puberty, viz.: increased mental feebleness; slow, monotonous, indistinct speech; irregular tremor of the hands and of some of the facial muscles, present during rest but increased by motion; uncertain gait, exaggerated reflexes, and general muscular rigidity, especially marked in the case that had existed the longer. Sensory disturbances were not observed. A peculiar fatigue of the muscles of speech and respiration was noticed after the patients had been talking awhile. The tremor was increased by voluntary motion and closure of the eyes. Giese did not obtain a necropsy in either case, as both patients were still living when his report was written. The pathology of this disease is not known. SPILLER.

A DISCUSSION OF INFLUENZA AS IT AFFECTS THE NERVOUS SYSTEM
(British Med. Jour., Sept. 29, 1900).

J. S. Bury classified his cases into two groups. In the first the nervous symptoms were of two types, the comatose and delirious; in the second group he classified a number of minor nervous sequelæ.

The comatose type shows in a well-marked example a patient with or without the usual influenza symptoms, who gradually becomes drowsy and apathetic; he answers questions with difficulty, and in a few days becomes comatose. Post-mortem examinations in such cases have shown either nothing abnormal or slight congestion of the meninges, or a purulent meningitis with or without an encephalitis, which may be hemorrhagic in character. The meningitis may have been secondary to an otitis or a primary influenza meningitis. A cerebral abscess may develop.

In contrast with this comatose type cases are met with in which there is great restlessness, irritability, delirium, and even mania. Dreschfeld has reported several such cases.

Of the nervous sequelæ following influenza there seems to be a rich harvest, greater, in fact, than any following other infectious diseases. Affecting the brain there may be neurasthenia, hysteria, epilepsy, outbursts of delirium, and every variety of psychosis; with meningitis, encephalitis, cerebral hemorrhage, embolism, and thrombosis of arteries, veins or sinuses. In the cord almost every variety of myelitis has been found, and in the nerves neuritis or neuralgia in the territory of nearly every cerebral or spinal nerve. Retrobulbar neuritis was of special interest. The paralyses affecting the bulbar nerves or their nuclei are often very bizarre, and illustrate one of the striking peculiarities of the influenza toxins. Isolated paralysis of the superior rectus, of the inferior or external rectus, with paralysis of accommodation, with paralysis of both third nerves, or both fourths or fifths, or sevenths, or with one side of the tongue. All of these tend to recover.

Dr. Broadbent reported cases of hemiplegia due to influenza, and had seen one fatal case of paralysis of the respiratory muscles in an influenza multiple neuritis. Dr. Allbutt brought out the fact that the cases of paralysis were very tedious and the prognosis quite grave, but the majority finally recovered, although at times with some slight impairment. He thought that the front cerebral lobes were especially prone to the action of the toxin. He urged lumbar puncture in order to clear up the diagnosis of many of the difficult cases. Dr. Buzzard spoke of the analogies which existed in the bizarre distribution of the symptoms to precisely similar groupings in syphilis and anterior poliomyelitis of children. These facts pointed almost conclusively to the fact that the causative factor in these irregular paralyses was the toxin of the influenza bacillus.

JELLIFFE.

A CASE OF DEATH FROM PSYCHIC INSULT, WITH REMARKS UPON DELIRIUM NERVOSUM DUPUYTREN, AND OPERATION-PSYCHOSES. F. Pagenstecher (Phila. Med. Jour., Vol. V, 1900, p. 863).

The results of psychic insults have been known to surgeons for some time under the name of delirium nervosum Dupuytren, and, more recently, of operation-psychoses.

Pagenstecher reports a case, which he believes to be the first of the kind reported, in which death was the outcome of a psychic insult. He gives the history of the case in detail, of which the following are the essential features: The patient was a merchant 51 years of age, who

had never been ill or injured in any way. He was not a drinking man. One day while at his desk sharpening a pencil he cut his thumb and his pen fell from his ear upon the wound, staining it with ink. His nephew tried to wash off the ink and then the man went to a physician near-by. He was very much excited and told the doctor that he was much worried for fear of blood-poisoning, as his ink was so poisonous. He complained of pain in his left arm and was anxious to notify his accident insurance company. The physician found, on the ball of the left thumb, four small vertical scratches, though all extended only to the true skin and could scarcely have bled. These scratches were each about 1 cm. long, and one of them was stained with ink. The patient wanted the doctor to amputate his arm if he thought it necessary. A dressing was put upon the thumb and the man went back to his factory. Later in the day he went home and complained of the pain in the arm. Then he went to see his family physician, who scraped away the ink with a knife and used bichloride solution on the thumb and put on a fresh dressing. The patient felt the poison working its way up to the axilla, and told his physician also to amputate the arm if it was necessary. After this dressing was put on the patient fell in a fainting fit, with profuse perspiration, and, because of this and because he thought he felt enlarged axillary glands, this physician thought that there were perhaps symptoms of blood-poisoning, but not enough to justify amputation. The patient passed a bad night and was very much excited when his physician called the next morning with an associate. He demanded amputation of his arm, was delirious, had auditory hallucinations, made arrangements for his own funeral, complained of headache, and tossed restlessly about in bed. At this time his pulse was 70, soft and regular; his temperature was not taken. After the doctors left, a nurse being with him, his face and mouth twitched and he crouched in the corner. When quieted he began to tell the nurse all about his private affairs. Then the twitching of the face and his nervousness began anew. The patient's face was yellowish-white and the pulse was regular. At 4 P. M. Pagenstecher was called to operate, and found the patient free from delirium, but most positive that he was going to die and that his arm must be amputated. He was fearful of the pain which would be caused by the removal of the dressing on his thumb, but said nothing when it was taken off. There was no sign of irritation in the wound, nor any appearance of infection or glandular enlargement. The statement about the painful areas on the arm were very contradictory. The patient appeared weak when he sat up, and the twitching of the face and mouth was striking. He also demanded amputation from Pagenstecher. An hour later his pulse was 72, soft, and full. Two hours later the patient was in a moribund condition, the heart's beat being scarcely audible. Death was sudden and wholly unexpected. The heart continued to beat for one and a half minutes after respiration ceased. Blood-poisoning was ruled out by the results of the necropsy, but no real cause of death was found.

Pagenstecher's opinion is that the case was one of traumatic neurosis which developed into an acute psychosis. He thinks that death possibly resulted from insufficiency of the heart, and doubts that it beat after respiration ceased. Two perfect examples of Dupuytren's delirium nervosum are cited in detail as illustrating less severe results of psychic insults.

Pagenstecher also discusses the predisposing causes of delirium nervosum and operation-psychoses and the cause of death in this case, and cites a number of writers who have written on these subjects.

This patient had a large amount of accident insurance, and the insurance company presented three theories against the claim, i. e.: (1) that the patient committed suicide by curare poisoning, (2) that it was a case of tetanus, and (3) that it was a case of acute hysterical psychosis. Pagenstecher agrees with the last theory, except in regard to the term hysterical.

BONAR.

100 BEOBSACHTUNGEN VON HEMI- UND DIPLEGISCHEN INFANTILEN CEREBRALLÄHMUNGEN (Mit besonderer Rücksicht auf nachfolgende Epilepsie) (100 Observations on Hemiplegia and Diplegia in Infantile Cerebral Paralysis, with Especial Attention to Consecutive Epilepsy). A. Fuchs (Jahrbücher für Psychiatrie und Neurologie, Vol. XIX, No. 1, p. 106).

This is a study by A. Fuchs of 100 cases of infantile paralysis of cerebral origin, with a view to the questions of etiology, of clinical symptoms, and of the resulting conditions, especially of epilepsy and idiocy. A neuropathic hereditary history was obtained in 54 per cent. of all cases; of the remainder, alcohol, syphilis, tuberculosis of the parents were the most frequent etiological factors. Only three cases were found in which the true etiology of Little could be demonstrated. In 44 per cent. of all cases epilepsy developed either immediately after the cerebral attack or later in life. In 42 per cent. of the cases the phenomena of post-hemiplegic spontaneous movements were found. Athetosis was more frequent than chorea. In this latter particular Fuchs' statistics differ from the older ones. The deep reflexes were found increased, as a rule; clonus was found frequently, more often in those cases where, as the result of the paralysis, a generalized neurosis, especially epilepsy, developed. A most constant after-result of the paralysis was joint deformity; in two cases a hypoplasia of the scapula was found. It is interesting to note that the so-called idiopathic muscle defect, or the high position of the scapuli, which had been frequently described, may be due to an infantile cerebral paralysis, which has left no other trace behind. On the question of epilepsy the following is noted: In the differentiation of the genuine from symptomatic epilepsy, it might be well to limit the term genuine epilepsy to those cases in which, together with the well-known clinical picture of epilepsy, that is, convulsions, psychical epilepsy is present also. This occurs either in the form of equivalents for the convulsions or in the form of epileptic impulsive insanities with absence of convulsions. All other forms, as well as those in which an anatomical lesion is present or suspected, should be classified as symptomatic epilepsy. In both cases no consideration, either as to the frequency or intensity of the attacks, is necessary.

SCHWAB.

"UEBER DIE WIRKSAMKEIT DER SPINALPUNCTION UND DAS VERHALTEN DER SPINALFLÜSSIGKEIT BEI CHRONISCHEM HYDROCEPHALUS" (On the Efficiency of Spinal Puncture and the Character of the Spinal Fluid in Chronic Hydrocephalus). Grober (Münchener med. Woch., 1900, XLVII, No. 8, S. 245).

The author gives the histories of two cases of chronic hydrocephalus treated by repeated lumbar puncture in addition to general tonic and hygienic measures.

Case 1. A boy of three years, with the general symptoms of rickets, an enormous head, with widely open fontanelle, and unable to use his limbs or to talk, was under treatment for seven months, during which

time he was punctured weekly twenty-five times in all. At the end of this period he could talk fairly well, could use his arms and run about the ward, and the fontanelle had contracted to about lentil size.

Case 2. A boy of two years, markedly rachitic, with enormous head, anterior fontanelle 12x18 cm., unable to sit up or to grasp, entirely undeveloped mentally, and having a rotatory nystagmus, was punctured twelve times; time under treatment not stated. At the end of this time his muscular power had improved and he could grasp; the nystagmus only appeared under conditions of excitement and the fontanelle had shrunk to 11x13.5 cm., but no mental improvement was noticed.

The author punctures after the method of Quincke, in the third or fourth lumbar space.

His experience has convinced him of the importance of paying attention to the pressure exerted by the escaping fluid. Normally it is given by Quincke as equal to 150 mm. (of water). In case 1 the highest figures were 600 and 700 mm. at the beginning of the evacuation; later, however, it was regularly 200-300 mm., but on intermitting the puncture for a month it rose again to 700 mm. If the pressure was allowed to fall below 100 mm. there were invariably produced unpleasant symptoms varying from headache to clonic convulsions in the legs. The level of the fluid fluctuated, being higher upon expiration, when the child cried, or when the fontanelle was pressed upon. In closing, the author gives the results of chemical analysis of the fluid drawn off, and discusses the composition of cerebro-spinal fluid in general, with possible indications to be drawn from variations which may be found.

ALLEN.

UEBER PSYCHISCHE TAUBHEIT (On Psychical Deafness). Alt (Wiener klin. Rund., 1900, XIV, No. 12).

The expression "psychical deafness" was first used by Heller, a pedagogue and not a physician, to describe a condition of apparent deaf-mutism in idiot children. In his paper Alt reviews the physiological connection between hearing and speech, discusses the proper methods of examination, and indicates through clinical descriptions what sort of cases should and what should not be classed as examples of psychical deafness. He would limit the term to those in whom the trouble lies, not in the auditory apparatus proper, but in a general defect of the brain, as evidenced by a condition of idiocy, or at least of feeble-mindedness.

ALLEN.

UEBER DIE BEDEUTUNG DER ZEHENREFLEXE (The Significance of the Toe-Reflexes). Martin Cohn (Neurologisches Centralblatt, No. 13, 1899, p. 580).

In line with the investigations of Babinski, Cohn examined the toe-jerks of a large number of healthy individuals and also those of persons affected with nervous disease. In adults without lesion of the nervous system, the plantar reflex elicited in 60 per cent. of the cases flexion, in 20 per cent. extension of the toes, while in 10 per cent. there was no movement of the toes at all. In young children the toe reflex was mostly absent, while in infants, extension chiefly resulted, which was especially marked in the big toe. In paralysis due to apoplexy, in cerebral tumor, and in amyotrophic lateral sclerosis there was extension of the toes. In spastic paraplegia the reflexes varied. Meningitis gave an active arching reflex, while tabes and polyneuritis showed

no toe-reflexes whatever. In a case of hysterical paralysis of one leg there was a reflex of extension of the toes on the affected side, whereas on the sound side the reflex was one of flexion. Cohn therefore concludes that a reflex of extension of the toes cannot be said to be of absolute pathognomonic significance.

JELLIFFE.

BEOBACHTUNGEN ÜBER ZEHENREFLEXE (Observations Upon Toe-Reflexes). Leonard Schüler (Neurologisches Centralblatt, No. 13, 1899, p. 585).

Following Babinski's published investigations regarding toe-reflexes, Schüler gives as a result of his work the following statistics: In healthy men he found movements of flexion of the big toe in 80 per cent.; movements of extension in 8 per cent.; movements of extension of the big toe and flexion of the other toes in 2 per cent.; while in 10 per cent. of the cases there were no reflex movements at all elicited. In women the results were very similar. In children there were found 40 per cent. without reflexes, in 12 per cent. a marked extension, in 30 per cent. flexion, and in 18 per cent. no clearly defined movement. In tabes, and likewise in a case of hysteria with hemianesthesia, there were no reflexes obtained. In all cases of disease in the pyramidal tracts, the reflexes were, without exception, of extension of the toes. Schüler concludes therefore that these phenomena, described originally by Babinski, are of importance in differentiating between diagnosis of organic and functional diseases.

JELLIFFE.

ZUR LEHRE VON DER MULTIPLN SELBSTÄNDIGEN GEHIRNNERVEN NEURITIS (The Multiple, Uncomplicated Neuritis of the Cranial Nerves). Carl v. Rad. (Deutsche Zeitschrift für Nervenheilkunde, Vol. 17, Nos. 3 and 4, p. 209).

The case of multiple cerebral neuritis uncomplicated by spinal neuritis reported by v. Rad occurred in a boy aged 14 years. The paralysis in the muscles innervated by the facial nerves began after pain had existed in each side of the face for about two weeks, and was associated with paralysis of the right abducens and later of the other nerves to the external muscles of the eyes. Reaction to light and in accommodation was preserved. Pain on pressure over the facial nerves was severe, and reaction of degeneration was observed. Both facial nerves were paralyzed in all their branches. Recovery from the polyneuritis of the cranial nerves was complete in about four and a half months.

SPILLER.

UEBER EINEN FALL VON TRANSITORISCHER REINER WORTTAUBHEIT (A Case of Transitory Pure Word-deafness). Otto Veraguth (Deutsche Zeitschrift für Nervenheilkunde, Vol. 17, Nos. 3 and 4, p. 177).

A man who had no hereditary disease, but whose nervous system probably had suffered from a former attack of typhoid fever and excessive use of alcohol, received an injury of the head. He soon recovered but some symptoms persisted, viz.: impaired vision, unequal pupils, concentric limitation of the visual fields for colors, dyslexia and impaired mentality. A mitral lesion of the heart was detected. About half a year after the accident, and following renewed alcoholic excesses after an abstinence of several years, transitory pure word-deafness was observed, i. e., the man understood nothing that was said to him, but heard sounds and spoke and read correctly. The writing was not tested. Death resulted from endocarditis. General atrophy of the cerebrum

was found, especially of the cortex and medullary substance of the first temporal gyrus in each hemisphere, and of the pars opercularis of the left third frontal gyrus. No focal lesion existed. The alcoholic excesses, in association with the atrophied cerebral cortex, may have aided in the production of the transitory pure word-deafness. SPILLER.

ON LEAD ENCEPHALOPATHY AND THE USE OF DIACHYLON AS AN ABORTIFACIENT. W. B. Ransom (British Medical Journal, June 30, 1900, p. 1590).

Ransom reports three cases of cerebral disease due to lead poisoning, two of which were caused by diachylon taken to procure abortion, and some other cases in which diachylon, taken with the same object, produced a different set of symptoms. The following are the cases of cerebral disease: Case I. A boy, aged seventeen years, a painter by occupation, was sent into the hospital for cerebral tumor. For three weeks patient had suffered from headache, vomiting—chiefly after food—colicky pains in the abdomen and dimness of vision. On admission to hospital he was found to be well nourished, but anemic, lethargic, and complained of severe frontal headache. There was well marked double optic neuritis, and a large retinal hemorrhage in the left eye. The heart was somewhat dilated, and there was a soft blowing murmur at apex. Urine was free from sugar and albumin. There was a slight blue line on gums. There was no paralysis, spasm, or anesthesia, and the pupils and reflexes were normal. The boy was put on potassium iodide, but did not improve until he was given digitalis also. Within a week after beginning the digitalis his condition became much improved, and five weeks after admission all his symptoms had disappeared.

Case II.—Married woman, aged thirty-nine years. Had not been well for a year. Had had two live children and six miscarriages, but there were no signs of syphilis. For five months she had suffered from severe headaches and vomiting without relation to food. During the last three months patient had three convulsions. One month ago patient began to be unsteady upon her feet, and had been confined to bed for three weeks. For a week woman had been semi-delirious, having visual hallucinations, and for two days had had diplopia. Examination: A stout, florid woman, with poor intellect and memory. She can answer some questions fairly well. A very intense blue line on her gums. She has some visual hallucinations at night. Complains of severe headache on vertex. Patient can sit up in bed, but can hardly stand or walk alone, tottering with head craned forward and swaying from side to side. The ataxia is not increased when the eyes are closed. The knee-jerks are well marked. Pupils react normally and are of medium size, the left a little larger than the right. There is a convergent strabismus, and occasionally some diplopia. There is double optic neuritis with hemorrhages on and around each disc; no chorioiditis or signs of syphilis. There is a general weakness in the limbs, but no atrophies, tremors, or local paralyses. No anesthesia is present, nor is there any facial or lingual paralysis. Speech is normal. This patient improved rapidly on potassium iodide and magnesium sulphate. The woman admitted having taken diachylon to produce an abortion about a year before she came to hospital.

Case III.—Unmarried woman, aged twenty-two years. Patient had complained of pains in stomach and head for three or four months. There had been some vomiting and severe colicky pains. For last month there had been intense headache in the frontal and right occipital

regions. Patient admitted having taken two pills of diachylon four months before because her menses were late. A week after taking the pills she began to feel dizzy and weak. Examination: A pale, thin girl, with a distinct blue line on gums. Patient is drowsy and at times slightly delirious. She can sit up alone, but cannot stand alone. Knee-jerks absent; plantar reflexes well marked. Her arms are rather weak, but not paralyzed. There is a well marked double optic neuritis. Pupils, eye and face movements normal. No anesthesia. Patient's vision was not examined at this time, but the writer thinks she could recognize people and read large type. During the first month in the hospital her condition remained about the same, except that she became more apathetic and drowsy, and a paresis of the left external rectus developed. Her intense headache and the vomiting continued. Then her symptoms gradually disappeared until she was in perfect health. But when the optic neuritis subsided it was found that the discs were atrophied and the patient was blind. The girl has since remained blind. The treatment was the same as in the previous case.

These three cases illustrate most of the symptoms of lead encephalopathy, and show how closely this disorder resembles cerebral tumor. The fact that the severe symptoms did not appear in these cases for such a long time after the taking of the diachylon is interesting as illustrating the slowness of elimination of the lead from the system.

Ransom thinks it curious that so much reliance should be put upon potassium iodide in the treatment of lead-poisoning, when researches seem to prove that it does not increase the elimination of the metal, and he calls attention to the fact that case I. did not begin to improve on potassium iodide until digitalis was added. He thinks that Epsom salts, with light diet and general tonic conditions, the most useful elements of treatment. The writer cites some cases in which diachylon taken to procure abortion produced toxic symptoms other than cerebral, and he discusses the increasing use of diachylon as an abortifacient.

BONAR.

UEBER DEN DIAGNOSTISCHEN WERTH DES GRÄFE'SCHEN SYMPTOMS UND SEINE ERKLÄRUNG (The Diagnostic Value of Gräfe's Symptom and its Explanation). G. Flatau (Deutsche Zeitschrift für Nervenheilkunde, Vol. 17, Nos. 1 and 2, p. 109).

Numerous observers have found that Gräfe's sign (the appearance of the sclera between the upper portion of the iris and the upper eyelid when the eyeball is directed slowly downward) is not pathognomonic of Graves' disease, and may be absent in pronounced cases of this disease and present in other conditions. Flatau has made a study of the cases in Oppenheim's clinic and has obtained the sign in bulbar paralysis, brain tumor, neurasthenia, hysteria, etc., and even in healthy persons. He was able to produce it in his own person at will.

SPILLER.

SEASICKNESS. H. Partsch (Medical Record, June 9, 1900).

A long experience on ship-board has taught Dr. Partsch that previous preparation is unnecessary and useless. Rooms amidships are preferable and good ventilation is extremely important. For the first few days, lie down most of the time, keeping the eyes closed and avoid excitement or tiring conversation. Whenever the slightest sensation of illness is felt lie down at once and close the eyes. Usually only one pillow should be used, and if very ill no pillow at all. Seasickness is the result of the disturbance of the circulatory apparatus and the accu-

mulation of blood in the relaxed abdominal blood-vessels. Retching is nature's method of flooding the brain, and vomiting and nausea are merely incidental, not essential. An abundance of nutritive material is necessary. One should eat about seven times daily, and the sicker the patient the oftener he must eat and the less at a time. When seasick the easily-digested fluids are best, such as ale, porter, stout, broths, soups, and meat extracts, the desires of the patient being considered. Food should always be taken at least ten minutes before arising in the morning, and when the patient is ill food should be taken without raising the head. The worst case of retching will be easily made comfortable in at least thirty minutes, by lying down without a pillow, closing the eyes and taking a pint of stout in six doses at five-minute intervals. Another food is made by mixing the yolks of two raw eggs with an equal amount of brandy and giving a teaspoonful at ten-minute intervals. The best time to take any beverage or food is just after a paroxysm of retching. Should it be taken before and thrown up, then take another dose immediately afterward and that will stay down. Severe headaches may be controlled by bromide of sodium in thirty-grain doses, to be repeated in one hour. JELLIFFE.

HEREDITARY EPILEPSY FOR FIFTY YEARS' DURATION CURED BY AN ATTACK OF HEMIPLEGIA.

Brunet relates the following case in the *Archives de Neurol*, 1900 (LX), March, p. 224.: Patient a female, born in 1812. Entered Charité as insane in 1857; father was an epileptic in the same asylum. First convulsion occurred when seven years of age and after scarlatina. In the observation period she had convulsions every week or fortnight, followed by delirium. In 1857 she suffered an incomplete left hemiplegia. During the next three years her convulsions gradually diminished, and from 1860 to 1877 she had no attacks; in 1877 she died of apoplexy. In 1871-1872 she was very carefully watched by both day and night for the seizures. Her mental state improved at this time, dating from cessation of attacks. CLARK.

THERMO-ELECTRIC STUDIES ON THE EPILEPTIC BRAIN.

Mirto, of Palermo (*Annali di neurologia*, 1900, fasc. VI, XVII) has studied the case of an epileptic boy aged 15, who sustained a fall in early infancy from which resulted a breach in the skull. This was covered with hairy scalp through which the pulsations of the brain could be seen. The seat was the posterior portion of the left parietal region. The case appeared to be one of typical epilepsy. Experiments were made upon this patient with the thermo-electric battery somewhat after the manner of Mosso in his experiments on the temperature of the brain. During an epileptic paroxysm the cerebral temperature was elevated. A diagram of the curve is given and the deviation is seen to be 2 mm., which is equal to 1-5 of a degree. JELLIFFE.

GEFAHREN DER LUMBALPUNCTION; PLÖTZLICHE TODESFÄLLE DANACH (Dangers of Lumbar Puncture; Sudden Death Following). F. Gumprecht (*Deutsche med. Wochenschrift*, No. 24, 1890, p. 386).

One of the dangers of lumbar puncture is the breaking of the needle while it is still inserted in the patient. Gumprecht has collected the reports of fifteen cases of sudden death following lumbar puncture, and adds two cases of his own. It cannot be asserted that the lumbar punc-

ture was the cause of death in all these cases, but the evidence shows that death was probably caused by the puncture. Most of the fatal terminations were in cases of cerebral tumor, and the danger is greater when the tumor is in the posterior cranial fossa. The fatal cases are usually those in which there are symptoms of increased cerebral pressure before the puncture—vomiting, headache, anomalies of the pulse, and choked disc. The death may follow the lumbar puncture within a few minutes or may be delayed, and usually occurs from failure of respiration. Artificial respiration should be resorted to, and trepanation might be advisable, as the pressure of the cerebral fluid may be much greater than that of the spinal from the occlusion of the communicating passages.

SPILLER.

MECHANICAL MUSKELERREGBARKEIT UND SEHNENREFLEXE BEI TABES DORSALIS (Mechanical Muscular Irritability and Tendon Reflexes in Tabes Dorsalis). Frenkel (*Deutsche Zeitschrift für Nervenheilkunde*, Vol. 17, Nos. 3 and 4, p. 277).

Frenkel says that the tendon reflexes in the upper extremities are almost always lost in tabes, and the absence of these reflexes may be one of the earliest signs of the disease. Abnormal excitability of the muscles to mechanical irritation is the rule in tabes, and the highest degree of this is found almost exclusively in the upper limbs, and especially in the preataxic stage of the disease. Abnormal muscular irritability was not found by Frenkel in cases with preserved or exaggerated tendon reflexes, but when these reflexes were lost the mechanical excitability of the muscle substance was increased, so that the cutting off of some unknown reflex irritation would seem to cause an abnormal irritability of the muscle.

SPILLER.

ALCOOL ET LA MORTE (Alcohol and the Death Rates). Chl. Fernet. (*Bull. de l'Acad. de Med.*, May 14, 1900.)

Although the use of alcohol is an important factor in regard to the prognosis of disease, it seldom figures as the cause of death. Yet it is the direct cause of death in the accidents of drunkenness, such as injuries, exposure to cold, etc., or when excessive drinking results in a fatal acute gastritis, gastro-enteritis, hepatitis, or pneumonia. It is a direct but more remote cause when it produces the ultimately fatal chronic conditions of arteriosclerosis, cirrhosis of the liver, interstitial nephritis, inflammation of the stomach and intestines, cardiopathies and meningo-encephalitis. By including delirium tremens, or from having lessened the recuperative power of the body, it is an indirect cause of death through rendering more fatal such acute infections as pneumonia, influenza, erysipelas, etc., and certain traumatic lesions. More indirectly still does it cause death by reducing the resisting power, and rendering the body more susceptible to infection, or by non-viable or mal-developed infants.

JELLIFFE.

THE THYROID GLAND AND THE MENOPAUSE. C. R. Burr (Boston *Med. and Surg. Jour.*, Dec. 21, 1899, p. 624).

The writer reports the case of a woman, fifty-six years of age, who had an apoplectic stroke nearly a year and a half after her menses had ceased, in which she lost power of speech and the use of her right side. Since the menopause she had had the numerous nervous symptoms

usually attributed to that period. There were flushings, neuralgias, hysterical attacks, a rapid pulse and loss of weight. Nine months after the apoplectic attack there was marked tremulousness, flushed face and an injected eye. Her speech was thick. She perspired profusely, was markedly emotional, and her pulse was from 100 to 120. She could not endure any pressure about the neck. Both eyes were prominent, and the thyroid gland was enlarged. Tincture of belladonna, *mii*, t. i. d., was prescribed, as the writer decided that it was a case of exophthalmic goiter. At the end of two weeks the sense of oppression around the neck had disappeared, the thyroid could hardly be felt, all the nervous symptoms were diminished, or absent, and the eyes were no longer prominent.

The thyroid is congested during menstruation, coition, pregnancy and accouchement. It is not known definitely whether its secretion is also increased, as it is with the congestion in exophthalmic goiter. It would appear from the above case, the writer thinks, that the menopause caused the congestion of the gland; that the secretion of the gland was increased; and that the active principle of the secretion caused an auto-intoxication, as in exophthalmic goiter. The symptoms of the menopause are very similar to the secondary symptoms of thyroidal intoxication. A number of other symptoms presented by the patient are also attributed to the intoxication caused by the excess of thyreoglobulin in the circulation.

BONAR.

ZWEI FÄLLE VON KLEINHIRNTUMOREN (Two Cases of Cerebellar Tumor). Schede (Deutsche med. Wochenschrift, No. 30, 1900).

Schede reports two cases of cerebellar tumor in which operation for the removal of the tumor was performed. In neither case could the location of the growth be positively determined from the symptoms. Each patient fell toward the left side, and this was regarded as indicative of a right-sided growth, but the sign was unreliable, as in each case the tumor was on the left side. In only one case could the tumor be removed, and improvement in this case was marked. The other patient died.

SPILLER.

ZUR DYSARTHRIKEN FORM DER MOTORISCHEN APHASIE, BEZW. ZUR SUBCORTICALEN, MOTORISCHEN APHASIE (Dysarthric Form of Motor Aphasia, especially Subcortical Motor Aphasia. W. Koenig. (Monatsschrift für Psychiatrie und Neurologie, Vol. 7, No. 3, p. 179).

Koenig reports a clinical case, with the symptoms of transcortical, cortical and subcortical motor aphasia; and also a case of subcortical motor aphasia, with necropsy, in which the diagnosis of brain tumor was made. Dysarthria suggested a bulbar lesion, but paraphasia seemed to indicate that the lesion was cerebral. A tumor of the size of a small apple was found in the lower half of the central gyri and lower part of the parietal lobe, presumably of the left side. The importance in these cases is in the conclusions drawn from them, viz.: Dysarthria, not differing from that known as bulbar dysarthria, may be a symptom of aphasia, and may be associated with stammering. It may be the remains of a previous motor or total aphasia, or the indication of a slight disturbance of function of the motor speech center.

SPILLER.

THERAPY.

DE L'EOSINATE DE SODIUM DANS LE TRAITEMENT DE L'EPILEPSIE ET DES ACCIDENTS QU'IL PRODUITS (Eosinate of Sodium in the Treatment of Epilepsy and the Accidents Which It Produces). Bourneville and Chapotin (*Le Progrès médical*, 1899, No. 52, 1900, No. 1).

The writers have recently treated a number of epileptic children with eosinate of sodium. Owing to the collateral effects of the remedy, it became necessary to suspend its use. The authors give a long clinical description of this salt, which contains a high proportion of bromine (one gramme of salt contains two-fifths of a gramme of bromine.) Sainton first used the drug for epilepsy in 1898. The only collateral effect noted was the presence of fluorescein in the urine. The present authors used the drug in 23 cases, divided into three series. It was given in 25 cg. capsules, one daily for a week, then two daily for a week, and so up to a daily dose of 3 grammes. Case I (idiopathic epilepsy); the major attacks were abolished, but attacks of vertigo seemed to be increased. Case II (symptomatic); no therapeutic result. Case III (idiopathic); no therapeutic result. In both these cases the drug produced strong collateral symptoms. Numerous small ulcerated points appeared about the face and ears, which left brown indelible scars. There was also a loosening of the nails of both thumbs by a serous discharge. Seven other cases are given, but nothing new is brought out. In some of the patients the eosinate actually caused an increase in the number of seizures. No decided benefit was obtained in any case. The number of attacks was sometimes diminished or arrested, but the attacks often appeared to be worse than ever after cessation of the treatment.

The principal interest in connection with eosinate of sodium appears to be the trophic lesions to which it gives rise. The eosinic intoxication is as follows: It is purely local, there are no digestive disturbances, no fever, or cardiac arrhythmia. The skin is almost the sole organ affected. It takes about 2.5 grammes to produce these lesions. The parts habitually exposed to the air are those affected by the drug. The face and hands redden and swell. Then minimal traumas may give rise to severe trophic lesions. Slight scratches appear to be sufficient to cause ulcerations over which yellowish crusts form and remain five or six days. After they drop off a small brown scar remains in situ. The scars are not indelible, but persist for months. Next in importance are the lesions of the nails, the latter being separated from the matrix, a serous discharge often co-existing. The thumbs are principally affected, the other fingers more rarely and with much less intensity. The toe nails are not affected. A careful comparison is made between the lesions due to eosinate and those which accompany bromism. Much more bromide has to be taken, as compared with eosinate, in order to produce these lesions. With regard to character of lesion, bromides induce diffuse and confluent forms of acne, which bear no resemblance to the ulcerations of eosinism. On the other hand, both drugs cause erythema and bromide pigmentation, but the characters are entirely distinct under the two remedies. On the whole, there is no similarity between the two forms of intoxication, save perhaps that those patients who are most cleanly in their habits, and who have in general a better morale, escape both kinds of intoxication to a large extent, when compared with the filthy and careless epileptic.

CLARK.

LE TRAITEMENT DE L'EPILEPSIE PAR LA MÉTHODE DE FLECHSIG (Treatment of Epilepsy by Flechsig's Method). T. Téglas and Heitz (Archiv. d. Neurolog, x., 1900, 56).

In this article a critical review of the opium bromide treatment of epilepsy as advanced by Flechsig is given, together with a report of twenty-two cases treated by this method. They find that the concomitant physical manifestations rapidly disappear under this treatment. They conclude that but few patients are able to stand this method of treatment; that it requires careful watching, is difficult to carry out, and is often dangerous. The disadvantages are not counterbalanced by the benefits received, and everything considered, the bromide method is to be preferred.

McCARTHY.

BEITRÄGE ZUR KENNTNISS UND DER BEHANDLUNG DER EPILEPSIE (Contribution to the Knowledge and Treatment of Epilepsy). G. Leubuscher (Monatsschrift für Psychiatrie und Neurologie, V, 5, 1899, p. 355).

Leubuscher satisfies himself that the results attained by the Flechsig cure are good and are at times obtained after the bromide treatment has failed. This Flechsig cure necessitates residence at a hospital for three or four months in order that the opium treatment resorted to, as well as the first weeks of the bromine treatment, may be under medical control and direction. Especially is this important in the period during which the opium is decreased and all the attendant symptoms make their appearance.

JELLIFFE.

TREPHING FOR TRAUMATIC EPILEPSY. Lamboth (La Press méd. Belges, Jan. 28, 1900).

Lamboth relates the following case: Youth of twenty-one years of age had severe epileptic convulsions for eight years. Thickening of left parietal, surface size of palm, developed toward cranium and much lessening its cavity. Trauma originated in a fracture *in situ*, possible separation of two tables having been followed by proliferation of diploë, or perhaps more probably an infectious diploëtis had occurred; ophthalmoscopic evidences of compressions absent. Patient had fallen from a height and struck his head; had been a typical epileptic for thirteen years, but development and intelligence had not suffered. Craniectomy was performed and a piece of bone 10 cm. by 3 cm. removed. It is stated that his attacks became much changed in type and immediately after the operation occurred at night only.

CLARK.

HEMI-CRANIECTOMY FOR EPILEPSY. Lamprasi (Annali di neurologia, 1900, XVII, fasc. VI, p. 414).

Lamprasi describes the following case: A youth, aged twenty years; epileptic. Left parieto-frontal region much depressed; attacks of convulsions typical, but without aura or monospasm; no mention of trauma. It was decided to remove one-half of the skull, and a horseshoe incision was made from front of ear to rear of same; an osseous pedicle was left. Forty days after the operation patient had continued free from seizures.

CLARK.

EIN NEUER BEHANDLUNG FÜR THOMSEN'S KRANKHEIT (A New Treatment of Thomsen's Disease). Hermann Gessler (Deutsch. Archiv. f. klin. Med., Vol. 66, Dec. 13, 1899, p. 259).

Gessler, believing that Thomsen's disease is the result of some lesion in the muscle plates associated with hypertrophy of the sarcolemma of the muscles, states that our treatment should aim to reduce the vitality of the nerves, and thereby to diminish the muscular hypertrophy. For this purpose, he suggests stretching or moderate compression. In one case in which this was employed, he was able to obtain very positive results, such as the restoration of the movements to the normal, and the disappearance of the myotonic contraction. The patient, however, relapsed at the end of six months. SAILER.

SOME NOTES ON THE USE OF MERCUROL: A NEW REMEDY IN URETHRITIS.

Ramon Guiteras, M.D., states that he has thoroughly tried Mercuriol in his clinic, and from his experience has drawn certain conclusions which he presents in this paper. After describing the chemical nature of Mercuriol he states that he found the weaker solutions had little effect and the stronger solutions were at first irritating. He finally concluded that the average strength best borne by the patient is ten grains to the ounce, or approximately two per cent. After having reached this conclusion he had the histories of 100 cases recorded, in 33 of which an examination for the gonococcus was made, revealing its presence in 30 cases. In the remaining 67 cases a clinical diagnosis was depended upon, since the writer considers the experienced eye competent to recognize the disease. In one extremely interesting case no gonococcus could be found in the urethral discharge, although gonococci were present in that of some venereal ulcers on the glands.

In these cases a two per cent. solution of Mercuriol was ordered which the patients were directed to inject three times a day, after micturition; the injection to be held within the urethra for five minutes at each operation. The clinical reports of the cases show that frequently in two days after beginning the use of Mercuriol, gonococci could no longer be found in the discharge.

The author discusses at some length the value of the term "practically cured," and sums up his argument by saying that to draw conclusions of value we should consider only cases that have been under treatment for three or more weeks, omitting those making but a few visits. On this basis he eliminates all but 65 cases from his report and tabulates these as follows:

Ten cases were cured in four weeks, or 15 per cent.; fifteen cases were cured in six weeks, or 23 per cent.; twenty cases were practically cured, as there was no discharge, though there were some shreds in the urine at the end of from four to eight weeks, 30 per cent.

One of the most valuable observations that the writer has made is the fact that only two cases suffered from complications, one having developed gonorrheal rheumatism and the other epididymitis. He states that this fact in itself would tend to argue much in favor of the use of Mercuriol, for where is there any other solution or mixture which does not show a greater percentage of complications? When we consider that many writers claim that epididymitis occurs in 20 per cent. of all cases of urethritis, the rate of 1 per cent. reported in

this series of cases argues much in favor of Mercuriol as a harmless, yet efficient injection.

Another interesting feature is that in only one of the 100 cases was there any marked posterior urethritis. Therefore it would seem that Mercuriol quickly destroys the gonococcus, lessens the severity of the inflammation, and tends to prevent the development of complications. From a comparative study of the different methods of treating gonorrhea the author concludes that treatment with Mercuriol is an advance beyond the older methods with balsamics and astringent injections.—*The Lancet*, London, England, Sept. 22, 1900.

PATHOLOGY.

EIN FALL VON SENSIBILITÄTSSTÖRUNG IM GEBIETE DES NERVUS CUTANEUS FEMORIS EXTERNUS MIT PATHOLOGISCH-ANATOMISCHEM BEFUNDE (A Case of Disturbance of Sensation in the Distribution of the External Cutaneous Nerve of the Thigh with Pathological Anatomical Findings). E. Nawratzki (*Deutsche Zeitschrift für Nervenheilkunde*, Vol. 17, Nos. 1 and 2, p. 99).

The case of paresthetic meralgia described by Nawratzki occurred in a man 80 years old. The symptoms were objective disturbances of sensation without subjective disturbances, and in these respects the case was atypical. At the necropsy a peculiar spindle-shaped swelling was observed in each external cutaneous nerve of the thigh, and these nerves were also found to be much degenerated. Peculiar cylindrical structures, which have been observed by others in nerves and not well understood, are regarded by Nawratzki as pathological formations in his case.

SPILLER.

PATHOLOGISCH ANATOMISCHE UNTERSUCHUNGEN AN ALKOHOLDELIRANTEN (On the Pathology of Delirium Tremens). Karl Bonhoeffer (*Monatsschrift für Psychiatrie und Neurologie*, V, 4, 1899, p. 265).

Bonhoeffer discovered changes in the ganglion cells by means of Nissl's methods, which consisted of an absorption of the structure of Nissl's bodies, changes in the staining power, and changes in the shape of the cells. Changes in the nucleus were at times present, at times absent.

The variety of the conditions in the cells met with in a single brain is by no means characteristic. Nor were the anatomical conditions similar in the various specimens. The most profound changes were visible in those cases which had succumbed to pure delirium. Not every delirium, says the author, is succeeded by marked degenerative changes in the boundaries of the cortex of the cerebrum. However, after severe deliriums of some duration, these changes were never absent.

Changes in Purkinje's cells were not noteworthy. On the other hand, the fibers of the cortex of the cerebellum showed special tendency to degeneration, especially those in the cerebellar worm, after severe delirium. At the same time a more marked degeneration was evident in the posterior root zones of the cord and in the restiform body.

The posterior columns of the cord especially were the seat of degenerative changes, while in the other columns these were not so marked. Bonhoeffer also found a tendency to blood-vessel changes around the gray matter of the medulla oblongata.

JELLIFFE.

Book Reviews.

A TREATISE ON MENTAL DISEASES. *Based upon the Lecture Course at the Johns Hopkins University, 1899, and Designed for the Use of Practitioners and Students of Medicine.* By Henry J. Berkley, M.D., Clinical Professor of Psychiatry, the Johns Hopkins University, Chief Visiting Physician to the City Insane Asylum, Baltimore. With Frontispiece, Lithographic Plates and Illustrations in the Text. New York: D. Appleton & Company. 1900.

The medical profession is to be congratulated that a comprehensive, practical work on mental diseases in English has at last in this book been presented to them. The dearth of treatises on this subject, especially those presenting it in a comprehensive and practical manner, and including not only the latest anatomy, histology and pathology of the central nervous system, but also a simple working classification of the different forms of mental disturbance and the best up-to-date treatment of them makes this volume very welcome. It will fill a long-felt want in the physician's library.

The author has divided the volume into three parts. *Part I* treats of the anatomy and histology of the central nervous system and is subdivided into six sections, as follows: *Section I*, Introductory, describing the meninges, the convolutions, the development of the fissures, and the arterial supply of the cerebrum; *Section II*, Histology of the cortex; *Section III*, the layers of the cortex; *Section IV*, the relation of the cortical elements to one another; *Section V*, the finer structure of the nerve cell; *Section VI*, the growth of the intra-cortical nerve fibres and cellular layers. *Part II* is on general pathology, and is subdivided into five sections and an *addendum*, thus: *Section I*, the boundary lines between degenerative and non-degenerative types of insanity; *Section II*, gross pathology; *Section III*, special pathology; *Section IV*, pathology of the cerebral vessels; *Section V*, syphilitic vascular lesions; and an *addendum* on "Arterial Anomalies in the Insane." *Part III*, consisting of five-sixths of the book, is devoted to the study of the clinical forms of mental diseases. In the first four chapters the author discusses the classification, general etiology, general symptomatology, and general therapy of mental disorders.

The existing confusion in the classification of mental diseases is due to the different bases upon which the various classifications have been made. A classification based upon clinical symptomatology is unsatisfactory, because the symptoms of one form of disease overlap those of another; while an etiological basis is also unsatisfactory, because the fundamental causation is frequently unknown and unascertainable. Berkley thinks that a classification based upon the morbid anatomy is much better than either of the two just mentioned. He has followed in this book the main lines of Kraft-Ebing's classification, except when the more recent study of a disease has made it possible to place it among the insanities following an ascertainable lesion of the cerebral substance. Although well aware that his classification of the forms of mental disease into four main groups is open to some extent to the same objections he has advanced against the

classifications based upon etiology and symptomatology, Berkley subdivides mental diseases, as being most convenient for the purpose of the clinician and the student of mental pathology, as follows:

Group I, Mental diseases without ascertainable pathological alteration of the brain substance.

Group II, Mental diseases sequential to ascertainable alteration of the cerebral substance.

Group III, Insanities due to inherited or acquired mental instability.

Group IV, States of complete or incomplete retardation of the psychical (and physical) development; and

Group V, The psychoses of childhood.

In *Group I*, the author includes melancholia, mania, states of mental stupor (acute curable dementia), states of mental enfeeblement consecutive to the idiopathic insanities, and their different forms. He subdivides melancholia into only five classes: Simple melancholia without delusions, delusional melancholia, hypochondriacal melancholia, agitated melancholia, and stuporous melancholia. Mania is described as (a) simple, (b) typical, (c) chronic. As a subtype Berkley also adds acute hallucinatory confusional insanity.

The states of psychical enfeeblement consecutive to the acute forms of insanity are grouped as follows: (a) Forms with slight mental weakness, (b) chronic delusional insanity, and (c) terminal or secondary dementia, agitated and passive.

Group II consists of progressive paralysis of the insane, syphilitic insanity, senile insanities, organic dementia, and three subgroups: (a) Intoxication insanities, (b) insanities following bacterial and toxalbumic poisoning, and (c) insanities following autogenic poisoning.

Progressive paralysis of the insane is described under four forms: The excited, the depressive, the demented, and the mixed forms.

The forms of syphilitic insanity are a transient furibund mania, a delusional syphilitic insanity, a progressive dementia attended by paralyses, and a syphilitic epilepsy.

Senile insanities are divided into presenile and senile varieties. The presenile insanities have excited, depressed, and confused forms. The senile insanities are subdivided into the depressed, the excited, and the confused forms, senile dementia and senile epilepsy.

The author describes the following varieties of organic dementia: (a) Consecutive to arterial lesion, (b) after abscess of the brain, (c) following hydrocephalus internus, (d) post-meningitic dementia, (e) syphilitic dementia, (f) dementia following disseminated sclerosis, (g) dementia consecutive to cerebral tumors, (h) dementia following trauma and insolation.

The intoxication insanities include those following alcoholic, opium, cocaine, and other forms of intoxication.

The insanities following bacterial and toxalbumic poisoning are divided into (a) the insanities of the puerperal period, (b) delirium acutum, and (c) the febrile deliria and psychoses.

Group III is made up of the insanities of the psychical degenerate, namely, chronic progressive paranoia, and the periodic insanities, with a subgroup consisting of the psychoses accompanying or following constitutional neuroses, as follows: Epileptic insanities, psychoses accompanying or following neurasthenia, and psychoses accompanying or following hysteria.

Berkley describes chronic progressive paranoia as having two forms, the early and the late paranoia, and two varieties, paranoia

simplex and paranoia hallucinatoria. These two varieties are subdivided again into the persecutory, the religious, the erotic, and the ambitious forms.

The periodic insanities are periodic mania, periodic melancholia, circular insanity, menstrual insanity, alcoholic periodical insanity, and periodical drunkenness.

Of the psychoses following or accompanying constitutional neuroses, epileptic dementia, mania, stupor and automatism are the most important. Neurasthenia and hysteria and their psychoses are considered under this grouping.

Group IV is made up of states of arrested development, i. e., idiocy, cretinism, and imbecility.

Group V consists of the psychoses of childhood.

As will be seen, Berkley's classification is much more simple than many previous ones. Being based, as far as our present knowledge of mental disease permits, on the morbid anatomy, this classification will suffer fewer changes as our knowledge increases than those classifications based on symptomatology or etiology.

The author considers each form of mental disease in a general way, and then discusses in detail its etiology, pathology, clinical picture, and treatment. He writes in a very pleasant style and presents the subjects comprehensively and interestingly. To the general practitioner, who is usually the first to see and treat the patient suffering from mental disorder, as well as to the alienist, this work will prove very valuable.

There is an interesting *addendum* to *Group IV* on cranial measurements and the stigmata of degeneration, and also two short chapters on the influence of tropical climates upon neurotic individuals, and on the psychoses peculiar to tropical climates.

The book is finely illustrated with original plates in black and white and colors, and photographs, and is one of which both the author and the publisher should be proud.

BONAR.

THE TREATMENT OF DISEASES OF THE NERVOUS SYSTEM: A MANUAL FOR PRACTITIONERS. By Joseph Collins, M.D., Professor of Nervous and Mental Diseases in the New York Post-Graduate School; Visiting Physician to the New York City Hospital. 8vo, 622 pages. Illustrated. William Wood & Company. 1900.

If any work could be said to meet a long felt want, the present volume under consideration lays claim to fulfill this mission. The subject was one that stood in crying need for an exponent, and an able one. It has found both. The long-suffering patient, the perplexed neurologist and the medical profession in general have been the gainers by its production.

It is not claimed that a better work could not be written on the subject, but it certainly is true that a better one does not at the present time exist.

The work is divided into three parts, with a sum total of 49 chapters. In part one, the author discusses in two very able and suggestive chapters the Causes and Origination of Diseases of the Nervous System and their Prevention. The ordinary discussion of these topics is so frequently conducted in a dry-as-dust, matter-of-hearsay sort of manner, that it is a pleasure to find that Dr. Collins has infused into them something of a living interest, drawn from a large experience. Especially commendable is the handling of syphilis as a cause of nervous

disease and also the relationship of the sexual life in its aberrant and over-wrought forms to neurotic types. The education and bringing up of the neuropathic child, expressed in two pages, says more than some hundred-page treatises known to the reviewer.

Part two takes up the general applications of remedial measures in the treatment of nervous diseases. Here more emphasis is placed upon the great cosmic forces of nature, heat, cold, light and electricity than upon drugs, *per se*. Chapters on Drugs, Hydrotherapy, Electrotherapy, Massage, Exercise, Rest and Occupation, Diet and Hypnotism are ample, stimulating and, for the most part, sound. The lists of drugs, with numbers following them referable to diseases on pages 62, 63 and 64, are too suggestive of "drop a nickel in the slot and get No. 59," and seem out of place in such a treatise. The chapter on diet contains some of the antique prejudices of the older writers in foods, which modern chemical analyses should have swept away. The old-fashioned ideas about red meats and white meats, under-ground and over-ground vegetables, animal proteids and vegetable proteids are once more called in to do yeoman's service. We would like to find a fuller consideration of the subject of hypnotism, especially from the interpretative side, because what there is, though fragmentary, is so good.

In part three, which makes up the greater part of the work, the separate diseases are discussed. Here there is much more than a simple work on treatment. The author has gone thoroughly into the subjects of etiology and of symptomatology, both, however, being considered as side lights to the main subject in hand, the treatment. These chapters will be found of great service, being exhaustive, definite and tempered with good judgment. Dr. Collins offers no panaceas; extols no quack methods; nor does he lean towards many of the *ignes fatui* "made abroad." Fraenkel's reeducation method for tabes is well and amply described, but wretchedly illustrated.

It will hardly be necessary to discuss, seriatim, the different points of view of the author. Most of his treatment is that sanctioned by neurologists the world over. Dr. Collins has performed the signal service of collecting and digesting it, and has, moreover, stamped his individual interests in every chapter. We commend this work to the attention of neurologists as well as to the general profession.

JELLIFFE.

ARBEITEN AUS DEM NEUROLOGISCHEN INSTITUTE AN DER WIENER UNIVERSITÄT. Herausgegeben von Prof. Dr. HEINRICH OBERSTEINER. Heft VII. Franz Deuticke. Leipzig und Wien. 1900.

Our memory is not severely taxed when we attempt to recall the first publication of these "Arbeiten" from Prof. Obersteiner's laboratory in Vienna. Seven numbers have now appeared, and each has contained original papers of high merit. In this recent volume many of the old names are wanting, but we find still that of Schlesinger.

Mager writes a long and carefully prepared paper on acute myelitis. He has studied seven cases with necropsy, and has found two forms of alteration of the spinal cord; one in which only the nervous structures proper were altered without implication of the neuroglia, and the other in which both the nerve fibers and neuroglia were diseased. The cases of myelitis that have been reported may be divided into two classes; into that in which degeneration of nerve fibers and glia occurs without small-cell infiltration, and into that in which a cellular infiltration occurs in connection with the degeneration. The cases of acute myelitis without a leucocytic infiltration, and presenting only the appearances of degeneration, form 80 per cent. of those reported, but according to

Mager the presence or absence of a small-cell infiltration within the tissues does not determine whether a case is one of myelitis or not, and all those cases belong under the head of myelitis, provided a cellular infiltration is found in the walls of the vessels of the cord. Infection is the chief cause of myelitis, and predisposing causes are cold, trauma and intoxication. The clinical appearances of myelitis are also discussed.

Halban reports three cases of alcoholic polyneuritis, in two of which alteration of the motor nerve cell-bodies of the spinal cord was found. In one of these cases the posterior columns were degenerated in the cervical and thoracic regions. The alteration of the cell-body that occurs in polyneuritis is discussed, as well as the uncertainty of the distinctions of primary and secondary degeneration, according as the chromatolysis is peripheral or central.

Schlesinger's name is so favorably known in medical literature that we expect to find the paper by him one of the best in the book, and his interesting case of amyotrophic lateral sclerosis does not disappoint us. A man, 72 years old, received a severe mental shock in the loss of his position, and his speech became at once affected. Soon after this a temporary, right-sided hemiparesis occurred. The mouth was opened with difficulty, and deglutition was affected. The secretion of saliva was increased, and forced laughter and crying were noticed. Tremor of the head and limbs, like that of paralysis agitans, developed. The pupils did not react to light, and only slowly in convergence and accommodation. To this bulbar palsy was added, progressive spastic paresis without distinct atrophy of the extremities, and finally spasm of the vesical sphincter and great exaggeration of all tendon reflexes. The necropsy showed that the case was one of amyotrophic lateral sclerosis. Argyll-Robertson phenomenon, tremor exactly like that of paralysis agitans, and trismus appearing as the first symptom of spasm, are unusual in a case of this disease. An acute commencement or rapid progression of bulbar palsy, according to Schlesinger, should always suggest the possibility of amyotrophic lateral sclerosis. In Schlesinger's case the degeneration of the pyramidal tracts was most marked in the medulla oblongata, and diminished in intensity above and below this portion; *i. e.*, it was most noticeable in the terminal portions of the motor fibers of the central motor tracts to the bulbar nuclei.

Zappert, in examining about 80 spinal cords of young children and animals, found in six from children, and two from rabbits, groups of bacteria in the vessels of the cord. He gives a review of the literature pertaining to the question of agonal or post-mortem wandering of micro-organisms from the intestinal tract into the tissues of the body. He thinks that, at least in some of his cases, the invasion of the vessels of the spinal cord was post-mortem, but that in others it may have occurred during life. The children died from diseases that cause sepsis, and the feebleness of cardiac action, with alteration of the blood, may have permitted the development of bacteria within the vessels of the cord. Zappert gives a warning that should be heeded, *viz.*, that bacteria found after death in the nervous system in cases of chorea, or after infectious diseases, or after symptoms of meningitis, should be regarded as the cause of the symptoms with caution, provided no alteration of the nervous tissue has occurred.

Karplus' case was one of meningo-myelitis, supposed to be of syphilitic nature. It seemed to show that a lesion situated at about the union of the middle and lower thoracic regions, and confined to the left posterior columns, and a part of the left posterior horn and left lateral column caused a temporary disturbance of sensation for touch,

pain and temperature, strictly limited to the left lower limb and left lower portion of the trunk, *i. e.*, a disturbance of sensation on the same side as the lesion. This seems to be contrary to the view that sensory fibers, for certain forms of sensation, at least, decussate immediately on entering the cord.

Schlagenhauser describes a case in which a small-cell sarcoma of the cervical cord and extensive sarcomatous infiltration of the meninges were found.

Another interesting case reported by him is one of disseminated sclerosis that resulted fatally within seven and a half weeks. This is, perhaps, the most rapid case of multiple sclerosis on record.

A third case by the same author was one of myelitis, with congenital hydromyelia, the latter possibly being a predisposing cause of the former.

Weiss describes the imperfectly recognized condition of diffuse sclerosis. The sclerosis in this disease is not sharply separated from normal tissue, and is extensive. The clinical picture is a remarkable one, and resembles somewhat that of parietic dementia, and also that of insular sclerosis.

Halban describes pronounced alteration of the nerve cells in tetanus.

Obersteiner shows that Helweg's bundle has been described as degenerated when there was no reason to believe that it really was so. The small caliber of the fibers contained within it causes it to stain differently from the surrounding tissue. He believes that the bundle described by the reviewer gives the cerebral portion of Helweg's bundle. Von Bechterew's olivary bundle was mentioned by Spiller, but not discussed, because von Bechterew regards his bundle as in direct connection with the lower olive. Von Bechterew's olivary bundle seems to have a more ventral position in the medulla oblongata than the bundle described by Spiller.

Obersteiner also describes the pigmentation of the glial cells in the molecular layer of the cerebral cortex. He does not regard it as an indication of pathological change in the cells. The amyloid bodies of the cerebral cortex, he thinks, may have their origin in glial cells. The pronounced pigmentation of the glial cells seems to be characteristic of the molecular layer of the cerebral cortex, and is not found elsewhere in the same intensity. The significance of the pigmentation is not known.

SPILLER.

MANUEL COMPLET DE GYNÉCOLOGIE MÉDICALE ET CHIRURGICALE. Par A. Lutaud. Nouvelle édition entièrement refondue contenant la technique opératoire, complète et 607 figures dans le texte.

Judging this by the American works that have appeared in the past few years, we find the comparison very favorable; the American works, however, are apt to be more practical and to the point.

The author has given in detail certain methods of procedure and treatment that have long been discarded, as well as those that are in vogue at the present day, yet he has brought out nothing new or original. The part which deals with surgical gynecology is very good, and the different operations have been well described, especially the chapters on vaginal and abdominal hysterectomy.

The book itself is a volume of 700 pages, very profusely illustrated. The illustrations, however, are hardly up to the high standard attained by the American publishers.

ADAMS.

Miscellany.

DR. JOSEPH COLLINS has been appointed consulting neurologist to the Hospital for the Ruptured and Crippled, of New York city.

DR. J. HENDRIE LLOYD has resigned his position as neurologist to the Philadelphia Hospital. Dr. Lloyd has become editor of the Philadelphia Medical Journal.

DR. ANDREW JOHNSON, of Omaha, Neb., has been appointed superintendent of the Institution for the Feeble-Minded at Beatrice, Neb.

THE DELAWARE HOSPITAL FOR THE INSANE has had a bequest of \$1,000 from a man who had been a night watchman in the institution for some years.

THE ILLINOIS NORTHERN HOSPITAL FOR THE INSANE, at Elgin, has a new infirmary, accommodating 110 patients, and costing about \$38,000. The building was opened on December 4.

DR. CHAS. HENRY BROWN is actively agitating a bill for the establishment of a Municipal Hospital for the treatment of acute nervous and mental diseases within the city and county of New York. It certainly is timely, and should receive the encouragement of all neurologists and alienists of the Greater New York. The New York Neurological Society has appointed a committee to draft resolutions and investigate the merits of the bill.

DR. CORNELIUS DEWEESE, pathologist at the Maryland Hospital for the Insane, Spring Grove, during the last four years, has resigned, to accept a similar position at the Government Hospital for the Insane, Washington, D. C.

THE TUSCALOOSA HOSPITAL FOR THE INSANE is so overcrowded that 1,500 patients are crowded into accommodations intended for 1,000. Attempts are to be made to get an appropriation of \$25,000, in order to relieve this condition.

THE CLEVELAND HOSPITAL FOR THE INSANE during the past year, treated 1,466 patients. On November 15, 1,085 patients were under treatment. The percentage of recoveries was 31.75. The per capita cost of maintenance was \$142.54.

DR. THOMAS D. CROTHERS, of Hartford, Conn., has been appointed professor of diseases of the brain and nervous system, with especial reference to the effects of alcoholic and drug poisons, at the New York School of Clinical Medicine.

IT HAS BEEN DECIDED to locate the Illinois Epileptic Colony at Notch Cliff, near Elsah, in Jersey County. This will be one of the largest institutions in the State, as there are between 4,000 and 5,000 epileptics in Illinois.

THE GREENVILLE SANATORIUM (South Carolina) was opened recently by its inaugurators, Drs. Thomas T. Earle, Curran B. Earle and Joseph B. Earle. The building, well located on high ground, is two stories in height and thoroughly equipped. It is now ready for patients.

INDIAN TERRITORY MEDICAL ASSOCIATION.—At the semi-annual meeting its president, Dr. Le Roy Long, of Caddo, recommended that steps be taken to secure congressional legislation for an insane asylum for the Indian Territory. A committee was appointed to look after the matter.

A RECENT CENSUS OF THE INSANE IN IOWA shows that in the three state asylums there are 2,901 patients, in the fifty-two county institutions, 987, and in four private hospitals, 453. This gives a total of 4,341 insane under restraint in the state.

NEARLY £100,000 has been given by the David Lewis trustees to establish the Lewis Epileptic Colony in Cheshire, England, and 400 acres of land have been secured at Warford. The cottage system will obtain, and from twenty to twenty-four patients will live in each cottage.

THE STATE ASYLUM AT YANKTON, S. D., is overcrowded, and the county jails hold many insane patients, because there is no room for them at the state asylum. The superintendent asks for an appropriation of \$204,672 for the next two years, and advocates that the name of the institution be changed to the "State Hospital."

DR. GEORGE A. ZELLER, superintendent of the asylum for the incurable insane at South Bartonville, Ill., has surprised the many applicants for his position by announcing his early return from the Philippine Islands, and that he is a candidate for reappointment.

THE STATE INSANE ASYLUM at Norristown, Pa., has entered suit against the city of Philadelphia to recover the sum of \$52,651.72, which is the balance of a total of \$103,331 expended in caring for the indigent insane persons in 1896 and 1897. At that time a total of \$2 per day was charged, but later the amount was reduced to \$1.75 for each patient. The city claims that the total amount overpaid during the intervening years was sufficient to equal the amount sued for; that the hospital gained by this agreement, and that a surplus was formed which was spent for improvements on the hospital, and that, therefore, the Commonwealth reaped a profit.

A WOMAN was recently arrested in London, charged with insanity, because she appeared at Osborne House, Isle of Wight, and made a disturbance, claiming to be a daughter of Princess of Battenberg. This woman boarded in New York not long ago, and told the landlady that she was related to Queen Victoria, and also to the Goulds, Vanderbilts, and a few other rich families.

HAVE YOU noticed the Bibliography of American Neurology and Psychiatry in each number of this *Journal*? It's on advertising pages xviii and xx, so that you can cut it out, paste on cards, and keep a complete bibliographical index of American literature on nervous and mental diseases.

THE MILFORD WOMAN'S CLUB, of New Hampshire, is beginning a movement whereby they hope to establish a home for the feeble-minded in that State. Their plan is to interest all the women's clubs in the state, and to start a subscription list, with the Milford Club at its head, with a subscription of \$50 and a pledge of \$25 annually to support the home. It is believed the response will be general.

DR. ALLAN BLAIR BONAR, 146 West Ninety-fourth street, New York city, has consented to take charge of this department, and will be glad to receive any items of interest to our readers.

RECENTLY GOODWIN BROWN, connected prominently with the hospitals for the insane of New York State, urged, before the Industrial Commission, that vigorous legislation should be made to protect the country from an influx of insane emigrants. Although 50 per cent. of the patients in the hospitals for the insane in New York State are foreign-born, and are costing the State \$1,000,000 a year, he was not prepared to say that there was a concerted effort on the part of foreign countries to foist their insane upon the United States.

THE ALMA SANITARIUM, of Alma, Mich., has sent out a beautiful little brochure describing that institution, which is one of the very best in the country. The officers are J. H. Lancashire, M.D., President; Geo. F. Butler, M.D., Vice-President and Medical Superintendent, and L. A. Sharpe, Secretary and Treasurer. There is a large staff of eminent consulting specialists, besides a house staff of competent physicians. The *Alma* does not claim to be the oldest or the cheapest sanitarium, but it does claim to have the most eminent physicians, the most expensive and approved remedial appliances, the strongest bromide mineral water, the finest furnishings, the choicest cuisine, and the most liberal management.

WITH THE DEATH of Herbert R. Spencer the last of the three prominent American workers in applied optics passed away. It is, therefore of general scientific interest to note the arrival in this country of one of the trained coworkers with Professor Abbe, of Jena, at the Zeiss establishment—Herman Kellner, Ph.D., who has already entered upon his duties as Scientific Director for the Spencer Lens Company, of Buffalo, N. Y. Mr. Kellner will continue his scientific researches with especial reference to microscope and telescope objectives. The attempt to establish, under American conditions, a scientific institution in Buffalo similar in methods to that at Jena will unquestionably be watched with great interest by American scientists.

PARESIS has been newly defined by Alderman Bridges, of New York. He says, "when a person thinks he's right, when he knows he's wrong, he's got paresis." *Mirabile dictu!*

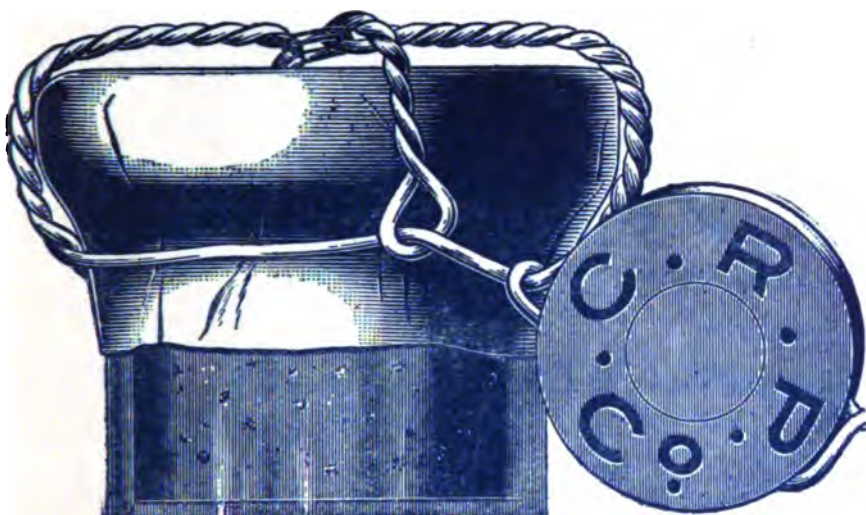
AN INQUIRY into the origin of certain wounds and bruises found upon the body of a man who died in the Insane Pavilion of Bellevue Hospital has already resulted in some radical changes in the "system" in the alcoholic ward and the insane pavilion. Ten of the nurses have been summarily dismissed by Commissioner Keller, and three of them have been held in \$5,000 bail each by the Coroner's jury which investigated the cause of the above patient's death. It is said that the Coroner's jury brought out enough evidence to warrant holding these three nurses for murder in the first degree. The patient had undoubtedly been brutally treated. Many other complaints of brutal and cruel treatment received by patients in the alcoholic wards and in the insane pavilion have since been published. Dr. Allan McLane Hamilton has arraigned the system in the insane pavilion, and says that the physicians charge fees when they have no right to do so, and are also in league with private sanitariums, whereby they send to them those patients able to pay, to their own financial advantage. Dr. Allen Fitch, one of the examiners, denies that any fees are demanded other than those allowed by the rules of the establishment. Commissioner Keller has settled this question by abolishing the fee system entirely.

The house doctors of Bellevue have also been charged with sacrificing the welfare of the patients to the medical students, and Commissioner Keller has written a letter to the Medical Board on this subject, as well as on the other points of complaint.

There is no doubt that abuses do creep into large institutions like Bellevue, and a good shaking up will do good occasionally.

DR. PETER M. WISE, whom Governor Roosevelt has recently dismissed from office, entered upon the study of medicine at the age of 19 years. After graduation he served as interne in the St. Louis City Hospital. Soon after retiring from this service he was appointed on the medical staff of the Willard Asylum for the Insane, now the Willard State Hospital, where he remained for twelve years. When Dr. Chapin retired from the superintendency of the institution, Dr. Wise was unanimously called to succeed him. At this time he declined a call to become superintendent of the State Asylum for Idiots at Syracuse. Dr. Wise designed and constructed the "Infirmary" at Willard, which was the first exposition of modern infirmary care in any country, and now universally adopted. In 1896 Dr. Wise was appointed by Governor Hill on the commission to locate and design an asylum for Northern New York. He designed what was substantially adopted in the construction of the St. Lawrence State Hospital at Ogdensburg, considered by experts to be the foremost hospital of its kind in the world. After declining a call to this new hospital several times, in 1890 Dr. Wise accepted the superintendency. Of the number of reforms which he introduced, the most important was the creating a high standard for nursing for the insane. His reforms have modified the practice of mental medicine throughout this country. In 1896 he accepted the office of President of the State Commission in Lunacy, which position he has held ever since. His experience, in nearly twenty-five years of previous service given to the State, has enabled him to promote the better management of the State institutions, and to attack understandingly the many problems that have arisen.

DR. PETER M. WISE was removed on December 20 from his position as President of the State Lunacy Commission, by Governor Roosevelt, on the charges preferred, of malfeasance in office. Dr. Wise was charged and found guilty of gross impropriety in directly or indirectly, by suggestion or otherwise, soliciting subscriptions to the Copper Hill Mining Company, of which he was president, from his official subordinates of both sexes, including superintendents, doctors, stewards, and, in at least two cases, the heads of private asylums which are under the supervision of the State Commission in Lunacy. He was also found guilty of using State labor in having an ice house built on State land at the Flatbush Asylum, in the interests of a private company in which he was financially interested. Dr. Wise claimed that when the construction of the ice house was undertaken he gave up his interest in the company, but it appears from his letters that he never gave it up at all, certainly not for eight months after the construction of the house was undertaken, and until it was believed that the process was a failure. Dr. Wise refused to answer any questions put to him by the Governor, and said that this action on the part of the Governor was due to a conspiracy of certain physicians, whom he named, because of the stand he had taken in trying to secure the removal of Dr. Van Gieson as director of the New York Pathological Institute, and that his private letters had been stolen and sent to the Governor, and upon these the charges against him had been based. Dr. Wise's term of office was to expire on December 31. He had held the office since 1896.



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February, 1901

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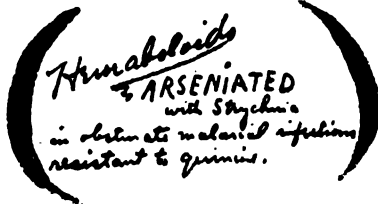
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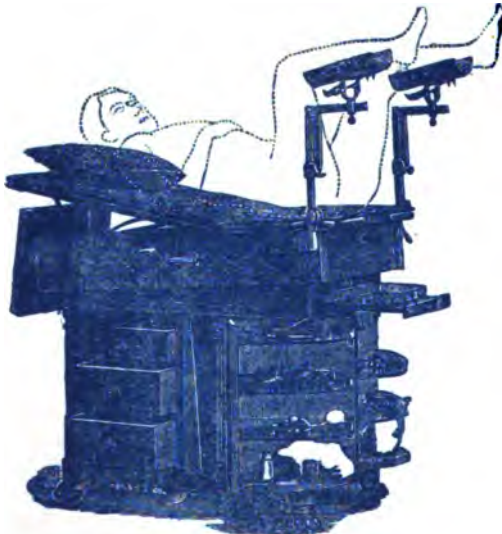
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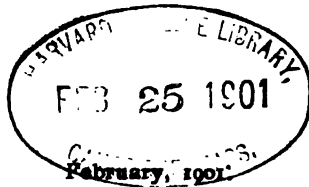
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VOL. XXVIII.

No. 2

THE
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Original Articles.

**A CASE OF CORTICAL SCLEROSIS, HEMIPLEGIA AND
EPILEPSY, WITH AUTOPSY.***

By CHARLES L. DANA, M.D.

Summary: Child, age four and one-half, forceps delivery, right hemiplegia from birth, general epilepsy from sixth month, operation, death, meningeal thickening, general cortical sclerosis in area of distribution of Sylvian artery, atrophy, degeneration of pyramidal tract, no degeneration of lemniscus or atrophy of cerebellum, considerable deficiency of tangential fibers.

The case which I have here to report furnishes a contribution to the pathological anatomy of infantile hemiplegia with epilepsy and helps to throw light upon the origin of at least some cases of this disease.

Leo L., age 4½ years, Hebrew, born in the United States, was referred to me by Dr. George Woolsey and I am indebted to him for the opportunity of seeing the case and of using the material. The family history is quite negative. The child was the first born and the labor was practically difficult, forceps being used. The infant was alive and had no convulsions at this time. There was no defect noticed at first, but within a few months afterward it was found that he did not move the right arm and leg quite so much as the left. He was a bottle baby and was poorly nourished, almost marasmic. The fontanelles were large and slow in closing and the mother says that the face was always bluish. During the second year of life he became quite healthy and looked well, but never used his right hand very much. The child began to walk at the age of two years, and talked a little at the end of the first year. Teeth first appeared at nine months, at which time he suffered from a bad diarrhea. When two years old he began to have convulsions without known cause, and these continued during

*Prepared for the twenty-sixth annual meeting of the American Neurological Association, held in Washington, May, 1900.

the rest of his life, but changed in their character. At first the attacks consisted of choking sounds, the eyes turned to one side and there was a blueness of the face and stiffening of the limbs. This was followed by complete loss of consciousness for about a quarter of an hour with clonic convulsions, each side being affected. There was some vomiting. After this he would lie in a stupor for one or two hours. Later on the convulsions became less severe and they were characterized



Fig. I. View of convexity of the hemispheres.

by smacking of the lips, irregular gestures and stiffening of the joints and of the body. No Jacksonian type was ever noted. He suffered a good deal from headache, and as he grew older he showed considerable backwardness in intelligence.

When seen by me at the age of 4½ years he was a well-nourished boy about normal height and weight. In walking there was a slight hemiplegic gait, and examination showed a distinct right hemiplegia involving the arm mostly. The right

foot was somewhat stiff and had a tendency to turn in. The right forearm, the wrist and the fingers were flexed and were decidedly rigid. There was exaggeration of the reflexes upon the right side. The head measured 48 cm. in its great circumference; there was some facial asymmetry. He could not use the right arm very well, and could not pick up a penny with his right hand, on account of the weakness and rigidity of the parts. Electrical reactions were normal in all the muscles except the forearm, where they were diminished. Facial innervation was less upon the right side. The right leg showed no shortening nor atrophy, but there was some shortening



Fig. II. Lateral view of left cerebrum showing microgyry, thickened pia and normal occipital lobe.

and atrophy of the right upper extremity. He had no athetoid or clonic movements. All the spinal reflexes were present, except the abdominal. The plantar reflex was of the flexor type. He could talk a little, but not very much. There were no disturbances of sensation or of the special senses. For the details of this examination I am indebted to Dr. Saml. M. Evans.

He was having the epileptic attacks with increased frequency, and owing to this fact and the hopelessness of medication, as tested by previous experience, I advised Dr. Woolsey to make an exploratory operation, hoping that, as some-

times occurs, some relief from the epileptic symptoms might be obtained through the emptying of the cyst and the removal of pressure, or through some mechanical change in the circulation. Dr. Woolsey therefore trephined and found the atrophied brain lying under the opening. He opened the lateral ventricle, which was distended, and withdrew some fluid. The child did not survive the shock of the operation. A post-mortem was made and the specimens were preserved and sections made by Dr. Schlapp, to whom I am indebted for

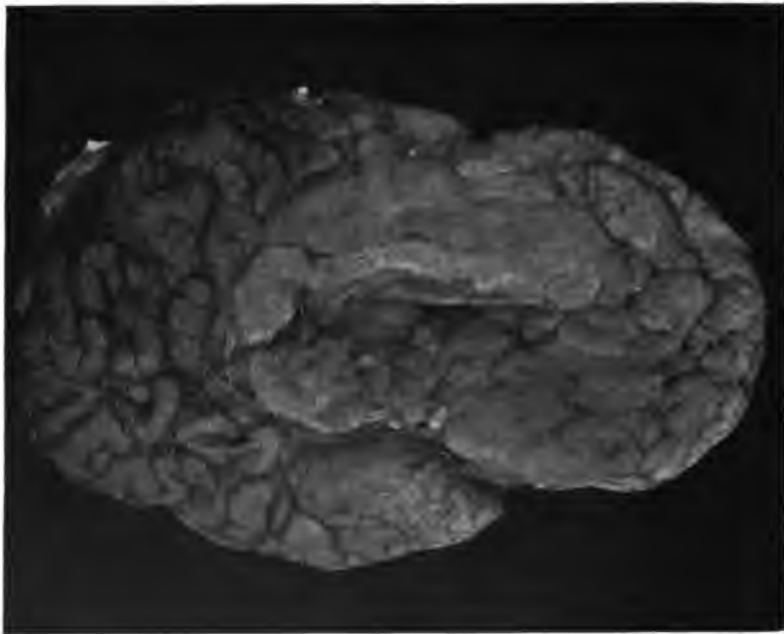


Fig. III. Median surface of cerebrum.

the preparations. The photographs of the brain show better than any description the conditions found.

Report of Autopsy.—The left hemisphere of the brain is greatly atrophied, being about one-third smaller than the right. The atrophy involves all the cortex except the occipital lobe, and to a less extent the anterior part of the frontal, which is normal. The atrophy corresponds very nearly to the distribution of the Sylvian artery. It involves the convolutions, which have shrunk up so that the typical fissures cannot be made out, except the Sylvian, and those of the lower

temporal, occipital and anterior frontal lobes. The small gyri are bound together by thickened connective tissue developed from the pia-arachnoid; and the vessels running into them are often obliterated. There is, however, no diffuse or lobar sclerosis. The increase of connective tissue being due simply to proliferation from the vessel walls and the pia-arachnoid. The condition is one of microgyry due to vascular defect. There is no evidence of venous thrombosis. The lateral ventricle is considerably dilated (twice its normal size).



Fig. IV. Section of prefrontal convolution, showing partly obliterated fissure and areas of diffuse sclerosis. $\times 1\frac{1}{2}$.

Microscopical examination (Nissl, Delafield, Weigert stains) shows some thickening of the pia, but no true meningitis. The vessels are not diseased, but many of the small pial arteries running into obliterated fissures are obliterated.

Throughout the cortex one sees areas of sclerosis which lie around the pial vessels, and which are evidently due to obliteration, partial or complete, of these. There is no independent sclerosis, and the trouble is plainly secondary to the

vascular defect. The sclerotic areas are very numerous, but do not extend into the white matter far, and the white matter is normal, so far as this process is concerned.

The cortical nerve cells are degenerated in many places, being small, irregular in shape and deficient in number. Many areas are seen in which the cells are fairly normal. It is impossible to make out any tangential fibers in most areas.

The fibers of the subcortical tissue show degenerative



Fig. V. Section of prefrontal convolution, showing fissure with sclerotic areas and degeneration of cells. $\times \frac{2}{3}$.

changes, but the study of these as yet is not complete. The basal ganglia were not affected. The cerebellum shows no atrophy. Sections through the pons and medulla show the usual degeneration of the pyramidal tract, those bundles near the median line in the pons being most affected. The atrophy involved about three-quarters of the tract on the right side. The posterior longitudinal bundles were normal. The lemniscus was not atrophied on either side. These findings are in harmony with other observations to the effect that when the

lesion is cortical there is no degeneration of the lemniscus or atrophy of the cerebellum.

Remarks: The lesions which are found causing conditions more or less similar to these clinically, that is to say, hemiplegia or diplegia and epilepsy are the following: 1. Diffuse sclerosis. 2. Lobar sclerosis. 3. Atrophic sclerosis. 4. Hypertrophic sclerosis. 5. Porencephaly. 6. Agenesis. 7. Cysts. 8. Simple atrophy. These various anatomical defects have as a cause (a) simple developmental defects, (b) chronic hydrocephalus, (c) meningo-encephalitis, (d) vascular lesions such as hemorrhage, embolism, thrombosis of veins and inflammatory lesions such as polioencephalitis. In the present case the anatomical defect is atrophy, due, as it appears to me, to a vascular defect or disease. It seems probable here that there was, during intra-uterine life, partial stoppage of the left middle cerebral artery, or there was a simple defect in the development of this artery and its branches, leading to the incomplete development of the brain which it nourished. The obliteration could not have been complete without leading to a more massive and localized lesion.

I do not think it possible for neurologists to tell from clinical studies exactly what is the organic anatomical condition in all cases of this kind. We can often be sure to detect a simple agenesis by the small size of the brain and the marked idiocy, but in this case the child's head was of fair size and the intelligence moderately good. We can tell the cause of other cases by the evidence of hydrocephalus and of still others by a distinct history of an acute onset of the disease subsequent to birth. By a process of exclusion we can therefore often reach a fairly accurate diagnosis. In the present case I was misled by the fact that the mother told us the attacks began with an acute illness several months after birth and it seemed possible that there had been an encephalitis or a hemorrhage with a possible formation of a cyst. This made the advisability of an operation a little greater, still even in cases where there seemed defective development it seems to me clinically to be shown that in some instances an operation upon the brain lessens the severity of the epileptic attacks and has a good influence in that way upon the development of the brain.

DIFFUSE DEGENERATION OF THE SPINAL CORD.*

Clinical Analysis of Fifty Cases.

By JAMES J. PUTNAM, M.D.

PROFESSOR OF DISEASES OF THE NERVOUS SYSTEM, HARVARD UNIVERSITY
MEDICAL SCHOOL; PHYSICIAN, DEPARTMENT OF DISEASES OF THE
NERVOUS SYSTEM, MASSACHUSETTS GENERAL HOSPITAL.

Pathological Study of Five Cases.

By E. W. TAYLOR, M.D.

INSTRUCTOR IN NEUROPATHOLOGY, HARVARD UNIVERSITY MEDICAL SCHOOL;
ASSISTANT PHYSICIAN, DEPARTMENT OF DISEASES OF THE NERVOUS
SYSTEM, MASSACHUSETTS GENERAL HOSPITAL.

(From the Sears Pathological Laboratory, Harvard Medical School.)

(Continued from page 21.)

PATHOLOGICAL REPORT, BY DR. TAYLOR.

The details of the pathological examination of five cases of diffuse degeneration are herewith given, with the essential features of the clinical histories, so far as they are obtainable:

Case I.—This patient, who at the time of his death was a man of fifty-five, had been under the medical observation of one of the writers for many years before the onset of the anemic and spinal symptoms which led to his death.

The family history, which was of much interest, has already been indicated in the earlier part of this paper. Let it suffice to say here that in the large family to which he belonged, tuberculosis, cancer, interstitial nephritis, and a highly psychopathic tendency had figured largely, associated with brilliancy, talent, and fine personal traits.

The patient himself, though always excitable and unstable, had been a successful man of business. Gradually, his nervous instability gained the upper hand, morbid fears and a tendency to outbreaks of passion showed themselves, and for many years before his death he made himself an exile at his country place. His physical health had never been vigorous, and digestive troubles of slight degree were of frequent occurrence. Between three and four years before his death it became noticeable that his complexion and skin were at times very sallow, even icteric. These periods seemed, as a rule, to attend or follow periods of depression or excitement, and might then pass quickly away. Little by little, however, the sallowness became more permanent, and was associated with marked pallor. Three years

*Read in abstract at the twenty-sixth annual meeting of the American Neurological Association, May, 1900.

before his death he was induced to make a trip to Europe, and while absent Dr. H. C. Baldwin, who accompanied him, noted an anemic murmur over the heart, which afterwards increased. Within two years before his death all the symptoms became more pronounced. Bleeding of the gums set in and became a troublesome symptom. Arsenic at first relieved him greatly in all respects, or seemed to do so, but the improvement was only temporary. A blood examination made by Dr. J. J. Thomas about nine months before his death gave the following result: Hb., 26 per cent.; reds, 1,284,000; whites, 3,750; polynuclear whites, 49.6 per cent.; large mononuclear, 20.5 per cent.; small lymphocytes, 27.2 per cent.; eosinophiles, 2.7 per cent.; poikilocytosis; numerous nucleated reds. The spinal symptoms came on gradually during the last year of his life, and consisted first in a feeling of numbness in the extremities, then in increasing weakness and inco-ordination, which, however, never reached a high degree. There was general emaciation and flabbiness of the muscles. Death came on gradually, with increasing exhaustion. The autopsy was made by Dr. W. F. Whitney, who found, besides extreme anemia of all the tissues, pigmentation of the liver (deposition of iron), and characteristic changes in the bone marrow.

Microscopic Examination.—Spinal cord alone examined. Stained by Weigert hematoxylin; carmine; carmine hematoxylin. The degenerations in this case are confined essentially to the dorsal and lateral regions of the cord, and are more marked in the upper than in the lower segments.

Lumbar Enlargement.—The degenerations in this region are exceedingly slight, as shown by the Weigert myeline sheath method. Throughout the dorsal columns there is a distinct diminution in the amount of staining myeline, with a proportionate increase in neuroglia elements: (Carmine-hematoxylin preparation.) The neuroglia septa are markedly increased in caliber, and the individual neuroglia cells are large. A similar change, but much less in degree, may be made out in the lateral tracts, occupying in a general way, but not sharply limited to, the pyramidal tracts. A section made slightly higher, lower thoracic region, shows a much more marked degeneration in the areas already named. Especially marked are two tongue-shaped areas in the dorsal tracts, placed symmetrically on either side of the dorsal septum. These areas show an almost complete disintegration of myeline and axones, with an imperfect compensatory proliferation of neuroglia.

Thoracic Region.—The thoracic cord at various heights from below upwards shows progressively more marked degenerations in the dorsal and lateral columns, of the general type

described above. The small tongue-shaped areas seen in the lower thoracic region become larger and show a tendency to coalesce in the dorso-median tract (Goll.). An area corresponding to the direct cerebellar tract is spared, in a part, at least, of the thoracic cord. There is no degeneration of the ventral tracts bordering the ventral fissure.

Cervical Region.—The degenerations still fairly sharply delineated are here more marked and extensive than at lower levels of the cord. The cerebellar tract is invaded on both sides to a certain degree; the dorsal tracts show a complete degeneration, with the exception of a narrow strip in the lateral portion of the dorso-external columns (Burdach) bordering the horns. The ventral white matter remains wholly uninvolved.

Gray Matter.—There is no evidence of an active degenerative process in the ventral horns. The lumbar enlargement shows many hyperpigmented cells, which, in the present state of our knowledge, must be regarded as a disorder of metabolism; the pathological significance of which is obscure. In the cervical region the motor cell bodies are fewer in number than one would expect, and show in certain instances distinct degenerative changes. The dorsal horns show nothing abnormal beyond an equally noticeable pigmentation of the cells of Clarke's column.

Nerve Roots.—In general the nerve roots, both dorsal and ventral, are not degenerated, though occasionally somewhat imperfectly staining bundles may be made out. The dorsal roots at no point show the changes which are an essential part of the pathological process in tabes.

Blood Vessels.—Many of the vessels within the cord have moderately thickened walls, in a condition of hyaline degeneration. The pia and its contained vessels are normal.

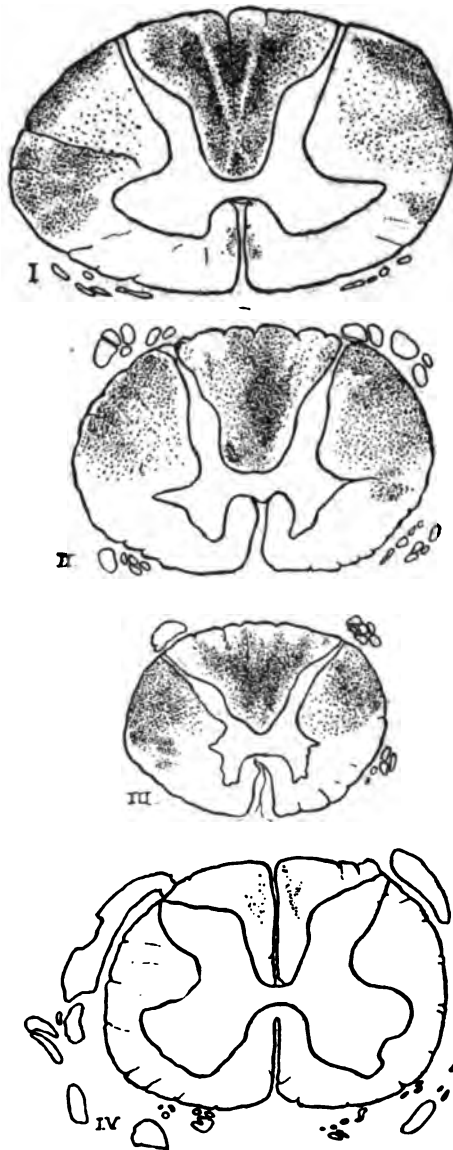
Summary.—Diffuse degeneration of dorsal and lateral tracts of cord, not sharply confined to recognized neurone systems; degeneration more marked in upper than in lower segments of the cord; slight nerve cell changes; insignificant degeneration in the nerve roots; hyaline degeneration of vessel walls.

Case II.—The patient, a lady, at the age of fifty-two came under the care of Dr. E. M. Buckingham, to whose courtesy the following notes are due. She had *always been anemic, easily worried and overworked, and had had a real and constant cause of worry for many years.* In 1882 she had a fall, striking on her back, and in 1883 a long continued and severe

bronchitis. In 1890 she had considerable diarrhea and nausea, which continued off and on for six months, when she had grippe, and this in its turn was again followed by nausea and diarrhea. In 1892 she had a severe hemorrhage from some part of the urinary passages, and after this was severely blanched for many months. From this time to 1896, when she died, nausea and vomiting, induced by fatigue or worry, were of frequent occurrence. During this period "numbness" of the arm was occasionally complained of, and in 1895 this symptom was specifically noted as affecting the legs and sometimes extending as high as the waist, though the slightest touch from another person's finger was felt in the affected parts. On April 16 of this year the blood was examined for pernicious anemia, but with negative results. Tremor in the left and then in the right arm was next noted. The pupils were found to have a normal reaction. She died finally on June 8, 1896, from exhaustion, due mainly to the continued attacks of vomiting. The urine had been examined many times by Dr. Buckingham and others, but without showing any traces of albumin or casts. Nevertheless (as in Case IV.) the kidneys were found, post mortem, to show signs of interstitial disease by Dr. Mallory. Edema had, however, been noted before this. The prolonged gastric symptoms in this case again recall to mind some of the statements in the paper by Dr. Adami above referred to, though the liver and spleen were found normal after death, as they had appeared to be on repeated examination during life.

Microscopic Examination.—Spinal cord examined; stained by Weigert hematoxylin; Marchi, Van Gieson; phosphomolybdic acid (Mallory.) The degeneration of white matter in this case is distributed chiefly through the dorsal and lateral tracts, with slight involvement of the ventral white matter. It is most pronounced in the cervical region.

Lumbar Enlargement.—The cord at this region presents an absolutely normal appearance of the white matter, with the exception of exceedingly small areas of degeneration in the dorsal columns on either side of and at a little distance from the dorsal septum, and also two areas, still less marked, in the region of the pyramidal tracts. These areas present the peculiar, vacuolated appearance later to be described more in detail, which there is some reason to think is characteristic of the type of process under discussion. The reticulum of myelinated axones and collaterals in the ventral horns are stained (Weigert) with distinctness and show no pathological defect.



• Diagrams of the Spinal Cord from Case II.

Thoracic Region.—In the thoracic region the degeneration has extended in a diffuse manner without definite relation to neurone systems over a large part of the dorsal columns, and the lateral tracts, sparing the ventral ground bundles, the area occupied by Gowers' tract, and the ventro-lateral ground bundles. The degenerated areas show numerous vacuoles, probably distended and disintegrating myeline sheaths, with no overgrowth of neuroglia, hence giving in Weigert sections a much less marked color contrast than ordinarily seen. Marchi slides show an enormous number of fat droplets throughout the degenerated areas, the product of disintegrating myeline, leading to the formation of fat granule cells. (Plate I., Fig. 1.)

Cervical Region.—The degeneration here is considerably more extensive than at lower levels. The dorsal columns are completely involved, excepting for a peripheral layer of normal fibers on the dorsal aspect of the cord and along the horns on either side, extending ventrally to the region of the dorsal commissure, in the immediate neighborhood of which fibers are also spared, as is usual, for example, in tabes. A point of interest also is the fact that a very narrow strip of essentially normal fibers divides on both sides the dorso-median (Goll) from the dorso-lateral (Burdach) columns, and that these lines of demarcation also separate two distinct varieties, or at least stages, of degeneration. (Plate I., Fig. 2.) Occupying the greater part of the median tract is a dense neuroglia sclerosis, of the type commonly seen in the cord compensatory to systemic neurone degenerations. Outside of these narrow limits, however, in the external dorsal columns, the peculiar type of change, to which we have already alluded, is predominant. The section is riddled with vacuoles of varying sizes, certainly not to be regarded as artefacts, since the change is sharply confined to the degenerated areas. It is further noteworthy that the vacuolated areas, in sections stained with osmic acid, show a very marked preponderance of fat over the dense sclerosis of the median column, indicating, no doubt, an earlier stage of degeneration. As remarked in the case already described, it is noticeable also here that in large areas of the degenerated portions the neuroglia shows no tendency to proliferate, giving the diseased areas a sieve-like appearance. (Plate I.) This fact we are inclined to think is of some importance in the proper interpretation of the nature of the pathological change under consideration. The lateral tracts of the cord in the cervical region are involved as in the thoracic region without respect to fiber tracts, but somewhat more extensively. The region of the cerebellar tract is particu-

larly involved; that of the pyramidal tract less so. A very slight degeneration occurs in the ventral portion of the cord on both sides of the fissure.

Gray Matter.—Normal except for over-pigmentation and other changes of ventral horn cells. In many cases the entire cell-body is filled with pigment; in others the nuclei have disappeared, apparently as a result of the encroachment of the pigment. Nuclei are in some instances distorted in shape, and frequently have lost their distinct outline. Many cells show an absence of granulation. A considerable number of cells are still to be regarded as normal. Cells of the dorsal horns also show a marked hyperpigmentation. An interesting group lying at the tip of one dorsal horn in the lumbar region shows the cell-bodies almost completely filled with pigment, the nuclei in those cells in which they are still visible placed excentrically and distorted in contour.

Nerve Roots.—The roots, both ventral and dorsal, are normal. The changes in ventral horn cells just described, whatever functional significance they may have, are evidently not sufficiently grave to lead to organic changes to an observable degree in their associated nerve roots.

Blood Vessels.—No noteworthy changes; pia normal.

Summary.—Diffuse degeneration of cord, most extreme in cervical region; definite alterations in nerve cell-bodies; no nerve root degeneration; no abnormality of vessels.

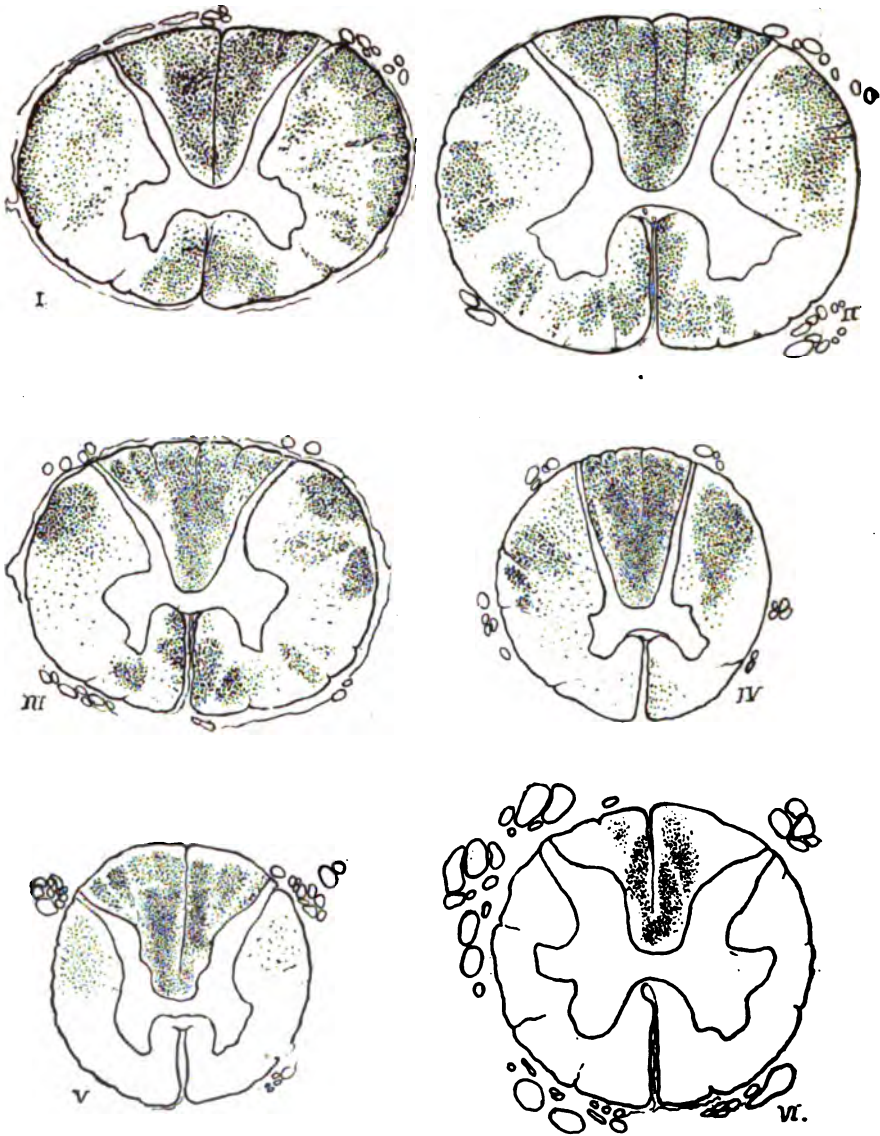
Case III.—This patient, who was seen in consultation by Dr. Putnam with Dr. Horace E. Marion, of Brighton, was a man of fifty-four, whose occupation was that of superintendent of streets. He was of good habits and free from any suspicion of constitutional disease. Examinations were made on July 10, 1894, and October 5, 1895. The illness had begun only eight or ten weeks before the first of these examinations with a feeling of sensitiveness and numbness of the hands. He reported that if he grasped anything a feeling of thrill or shock would run through the hands and arms, and even into the chest and back. At that time the legs were not involved, and the knee-jerks were present, but slightly developed. The numbness of the hands was associated with a disability in their use so great that he could with difficulty feed himself. Walking caused fatigue, but otherwise was normal. The urine had been examined and a trace of arsenic found, associated with signs of irritation of the kidney. The grasp of the right hand was excessively feeble, and both hands and arms showed slight degrees of atrophy of some of the hand and forearm muscles, with quantitative changes in the electrical reactions. The pa-

tient improved in the use of his hands, as so often happens, but after a time similar sensory symptoms appeared in the feet, legs, perineum, and genitals, associated with rapidly increasing loss of muscular power. Shortly before the second examination he had been confined to the bed with an attack of vomiting and diarrhea, and when this was over he found himself at first unable to get up because of muscular weakness. The sensibility of the rectum was diminished and there was slight objective loss of the sense of contact in the feet, associated with a hyperesthesia which made it uncomfortable for him to be handled. There was also a well-marked sense of constriction about the legs. The micturition had become slow and difficult. The knee-jerk was present on both sides and rather greater than is common in health, and the Achilles reflex was also slightly exaggerated. The Romberg sign was present in a slight degree. The nutrition was poor, the face was sallow in color and the Hb. was found to be 65 per cent. The patient continued to lose ground gradually and died in complete paraplegia.

Microscopic Examination.—Cord examined. Stained by Weigert hematoxylin; Van Gieson, hematoxylin-picric-acid-fuchsin; Mallory-phosphomolybdic acid. This case resembles, in general, the foregoing in its pathological anatomy, but shows a still more extensive process, likewise of greatest intensity in the cervical region.

Lumbar Enlargement (Plate II., Fig. 4).—Sections through the sacral region show no abnormality of white or gray matter. In the lumbar enlargement there is a very marked, irregularly distributed degeneration in the dorsal columns, the lateral tracts and other portions of white matter remaining uninvolved. The type of degeneration is a combination of the ordinary neuroglia sclerosis and the non-proliferative variety already described. In this region the degeneration occupies a central position, nowhere reaching the dorsal periphery, nor the surrounding gray matter of the horns and commissure. At a slightly higher level the areas of degeneration are diminished in size and still confined to the dorsal tracts. At the transitional portion between the thoracic and lumbar cord the degeneration of the dorsal tracts is again more extensive, and distributed in more or less discrete patches. A slight degeneration in the lateral columns, in the neighborhood of the motor tract, is observable. Other portions of the cord are not involved.

Thoracic Region.—Throughout this region, varying somewhat at different heights, the degenerated areas involve the dorsal tracts, as already described, occasionally reaching to the periphery. The area of the pyramidal tracts and outlying por-



Diagrams of the Spinal Cord from Case III.

tions of the lateral white matter are very markedly degenerated. There are also occasional small islets of degeneration in the ventral columns, and also in the ventro-lateral white matter. The degeneration is nowhere sharply confined to neurone tracts.

Cervical Region (Plate II, Fig. 3).—Both in the lateral and dorsal columns, as well as in other portions of the cord, the process here reaches its greatest intensity. Sections present a widely extended and very diffuse degeneration, involving in addition to the areas described above, a considerable portion of the ventral white columns, and in patches the contiguous white matter back to the chief areas of degeneration in the lateral tracts. Excepting a fairly dense neuroglia overgrowth in a part of the dorsal columns, the type of degeneration is the one characterized by the non-proliferation of neuroglia and the formation of vacuoles.

Gray Matter.—Beyond a considerable pigmentation of certain cells of the ventral horns, which is probably within normal limits, nothing noteworthy is observed.

Nerve Roots.—The roots, both dorsal and ventral, are, for the most part, normal. Occasionally a somewhat circumscribed area of partial degeneration may be made out (Plate II, Fig. 4), suggesting very strongly a local disturbance of nutrition rather than a primary disorder of groups of neurones. This is further borne out by the fact that the root zone is essentially intact throughout the cord.

Blood Vessels.—Beyond the fact that the smaller vessels are in general distended with blood, and hence more conspicuous than normal, they show no abnormality. The larger vessels, *e. g.*, ventral artery of cord, show no sclerotic changes. Pia normal.

Neuroglia.—The neuroglia in this, as in the foregoing case, is of special interest, from the fact that it shows small tendency to proliferate in areas which have undergone the most extensive degenerations. There is no thickening of the circumferential layer, as ordinarily seen in chronic cord diseases.

Summary.—Diffuse degeneration of white matter of cord, most marked in the cervical region. Gray matter uninvolved; dorsal nerve roots slightly degenerated in patches; blood-vessels normal.

Case IV.—This patient was a woman of fifty-six, who was under the care of one of the writers off and on for twelve years. Her family history has also been alluded to in the earlier part of the paper, and is of importance from the fact that her older sister had died, after a lingering illness, with paralysis and a high degree of contracture of both legs. The tendon reflexes had

been greatly exaggerated, and attempts at voluntary motion had been associated with tremors, or irregular muscular movements. There had been, however, no disorders of speech. The mental condition had been from time to time impaired. Both of the sisters were small in stature, of slender build and of delicate health. The patient was remarkable for pallor all her life long, and likewise for her eccentric disposition, associated with great energy and other fine qualities. Throughout the long period of her illness the most prominent symptom, until later years, was an extreme sense of numbness in the hands, feet and legs. It is interesting to note that this began during a prolonged and prostrating illness from boils on the legs, abdomen and thorax, with which she had been confined to the bed. This occurred about one year before my (Putnam's) attendance began. The first seat of the numbness was the inner side of the left great toe, where it was felt as a sense of tingling. Gradually both feet and the hands became involved. At first careful tests failed to reveal any objective loss of sensibility, but it may be remarked with regard to this statement, which one hears so often made in the reports of these cases, that it probably indicates insufficient means of observation, for the patient herself had found that she could not distinguish textures as well as before her illness began. At times the feet felt excessively cold. The knee-jerk was absent, and remained so throughout her illness. The Romberg symptom at that time was not present, and there was no sign of unusual lack of strength or motor inco-ordination. For many years the condition of the patient remained about the same, as regards the nervous symptoms, which did not improve even with temporary improvements in the general health. Within the last two or three years of her life, however, gradually increasing muscular weakness and ataxia came on. Constipation and an insufficiency of the digestive powers were fairly marked features of the case, though never present to a high degree. The urine was repeatedly examined, but the records are, unfortunately, not at hand. No reason had been found to justify, it was thought, a diagnosis of chronic interstitial nephritis. Death occurred from an attack of bronchial pneumonia, associated with a serious affection of the bladder, at a time when the patient was in a very feeble state, though with a perfectly clear mind. The autopsy was made by Dr. F. B. Mallory, who rendered the following report:

Body slender, muscles small, fair amount of subcutaneous fat tissue. Brain soft, nothing abnormal seen on gross examination. Cord, evidences of degeneration in the dorsal column of the thoracic and cervical regions. Heart flabby, small, fatty degeneration. Lungs, marked edema, with a number of areas

of purulent bronchial pneumonia. Spleen soft, pulp increased. Kidneys much diminished in size, capsule adherent, surface granular, fatty degeneration. Bladder extensive, diphtheritic cystitis, most marked at the neck, where there was considerable loss of substance due to ulceration.

Microscopic Examination.—Cord, oblongata, cerebral cortex, peripheral nerves, examined. Stained by Weigert hematoxylin and hematoxylin-eosin.

The degenerations of the cord in this case are diffuse in character and slight in extent, confined to the dorsal columns and less in degree to the lateral tracts.

Lumbar enlargement and region below. Slight but distinct degeneration in the dorsal columns, sparing the root zones and the commissural fibers adjoining the dorsal commissure. The lateral tracts show a very slight myeline degeneration, not limited to the pyramidal tract.

Thoracic Region.—In general similar areas of degeneration, varying somewhat at different heights and most marked in the dorso-median columns.

Cervical Region.—Similar degenerations.

Gray Matter.—The cells of the ventral horns show an excessive pigmentation.

Nerve Roots.—For the most part normal, both ventral and dorsal. At certain points, however, there is a distinct but not extensive degeneration of dorsal roots, of a character which suggests a local cause rather than a part process in a true neurone degeneration.

Blood Vessels.—The vessels either without or within the cord show no noteworthy change.

Neuroglia.—The character of the neuroglia overgrowth is not of the type described, for example, in Cases II. and III. The degeneration of myeline is slight in degree, even in the most degenerated areas, and the neuroglia has in general made good the deficiency. The limiting layer of neuroglia is of interest in the fact that at many points it shows a considerable widening.

Oblongata.—Normal. Cerebral cortex, normal.

Peripheral Nerves.—Median or internal saphenous, no noteworthy change. There is in a Weigert section a slight irregularity in the myeline staining, probably due to post-mortem change rather than to a true degeneration.

Summary.—Slight degenerations of dorsal and lateral tracts, not limited to recognized neurone systems; slight changes in dorsal nerve roots; vessels, normal; oblongata, cerebral cortex, peripheral nerves, normal.

Case V.—This patient was a woman of fifty who had been examined at different periods by both the writers and by other physicians, whose observations will be in a measure referred to.

It was said that she had always been pale in color and somewhat self-willed and excitable in disposition, though otherwise in fairly good health until about four years before the first examination was made. Two years previously to that she had sustained a severe loss in the death of a near relative, to whom she was deeply attached, and on whose companionship, in fact, she was very dependent, and it is probable that the severe shock of this experience was the immediate cause of her later illness. The prostration of this shock was followed, after a time, by a tendency to insomnia, and this by a gradual loss of flesh and color. Even as long as three years before our first examination she began to notice "thrilling" sensations in the ends of the fingers when struck together, and also "drawn" feelings in the hips and knees, and across the abdomen on going upstairs. This last feeling was increased by walking, which she consequently used to dread. These paresthesias were followed after a year by gradually increasing difficulty in walking and in the use of the hands, at first mainly of ataxic character, finally paralytic. The whole duration of the motor symptoms was about two years. In the last year, or year and a half, of her life both the anemia and the nervous symptoms, including the mental excitability, steadily gained ground. Two blood examinations made respectively about six and three months before her death showed a reduction of the red cells to about 2,000,000, and the Hb to 40 per cent. There was also well-marked poikilocytosis and megalocytosis. As regards the mental condition, it may be said that at quite an early period in her illness she had had a difficulty in expressing herself, which does not appear to have been due to a localized cerebral lesion, but rather to the anemic condition of the brain. This did not return in a distinct form, though when fatigued or embarrassed she would sometimes have slight trouble in finding her words. In general her memory remained good, but she was subject to violent outbreaks of passion under slight provocation, and showed considerable lack of judgment as to her own condition and her obligations to those around her. Except in these respects, she retained a high degree of keenness to the last, even at a time when she was bloodless from pallor and scarcely capable of a movement of hand or foot. Toward the end the limbs became extremely edematous.

The body and nervous system at autopsy showed nothing

remarkable beyond an extreme degree of pallor and degenerations of the cord, about to be described.

Microscopic Examination.—Brain and cord examined. Stained by Weigert hematoxylin; phosphotungstic acid-hematoxylin; hematoxylin-eosin; Nissl.

The degenerations in this case involve chiefly the dorsal and lateral columns, and approach more to the type of a true combined neurone degeneration than the cases already described.

Lumbar Enlargement.—The degenerated areas of the cord are confined to a narrow area on either side of the dorsal septum, and to the region of the pyramidal tracts. The nerve roots show occasional patches of degeneration not of the neurone type. The lower thoracic region shows a dense neuroglia sclerosis of the dorsal columns, much more extensive than in the lumbar enlargement, sparing the root zones and a narrow strip on either side of the dorsal septum (Flechsig's oval bundle?) and along the dorsal periphery. The region of the pyramidal tracts shows a degeneration somewhat less in degree; nerve roots, normal.

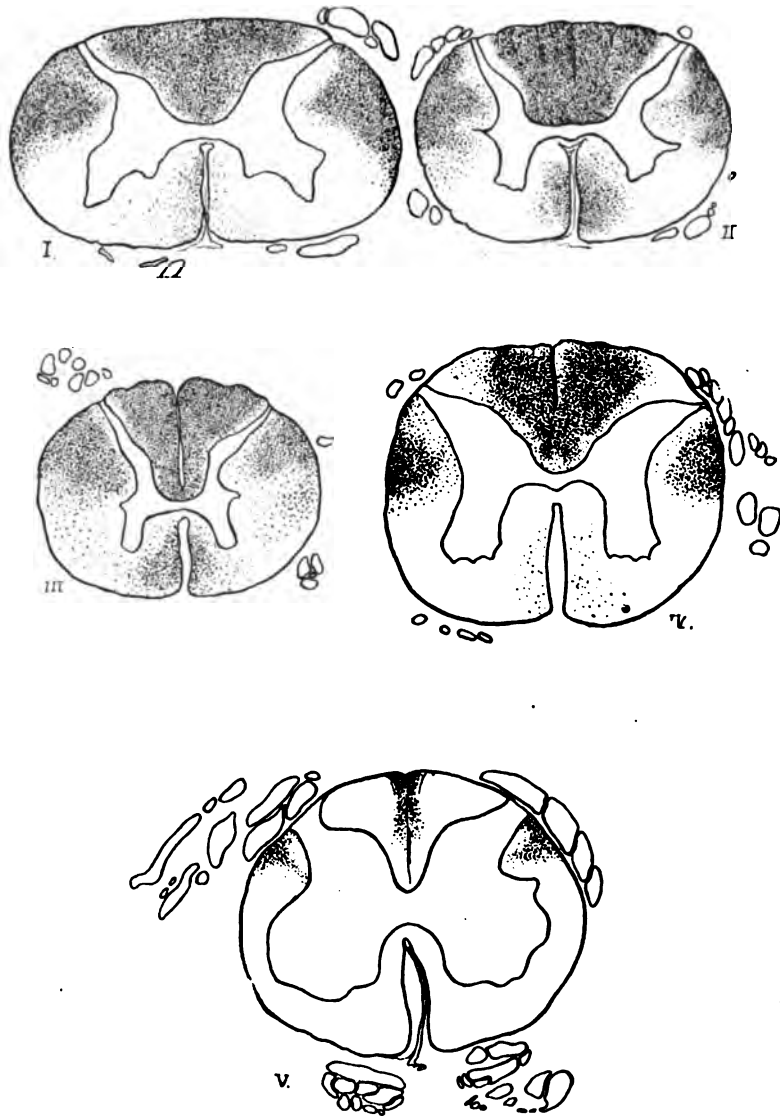
Thoracic Region.—Similar degenerations to those just described, but more extensive, and in the lateral columns extending beyond the areas of the pyramidal tracts. The ventral columns bordering the fissure are also irregularly degenerated. The upper thoracic region shows a similar distribution of the degeneration, but more extensive; the direct cerebellar tract is involved. Nerve roots and the dorsal root zone are intact, as are also fibers of the dorsal commissure.

Cervical Region.—The degenerations here are slightly less extensive than in the upper thoracic region, but are fairly sharply limited to the same general areas.

Oblongata and Pons.—The dorsal columns show a continued degeneration into the oblongata, which, however, does not include an involvement of the secondary (fillet) neurones. There are also occasional small areas of degeneration, which have no relation to recognized neurone systems. The pons shows no noteworthy abnormality.

Gray Matter.—Beyond hyperpigmentation in many cases, the ventral horn cells of the lumbar and cervical enlargements show no abnormality (Nissl). The same is true of the cells of the paracentral lobule of the brain. In some few cells the staining is slightly diffuse, and the pigmentation excessive, but most of them show a normal staining nucleus and distinct Nissl bodies.

Blood Vessels.—A slight hyaline thickening of the walls of the smaller vessel is observable in the degenerated areas. There is no general arterio-sclerosis.



Diagrams of the Spinal Cord from Case V.

Neuroglia.—In this case the overgrowth of neuroglia in analogous to that seen in diseases of the ordinary degenerative type. In the degenerated areas there is, almost without exception, a dense compensatory hypertrophy of the neuroglia.

Summary.—Diffuse degeneration chiefly of dorsal and lateral tracts of the cord, simulating a true combined neurone degeneration, more marked in upper than in lower segments of the cord; essentially normal nerve roots; slight involvement of oblongata; slight hyaline degeneration of vessel walls within the cord.

The five cases reported above undoubtedly belong to a distinct group of pathological processes, chiefly involving the cord, and rendered familiar during the past decade by the work of Lichtheim,¹ Putnam,² Dana,³ Minnich,⁴ Nonne,⁵ Bastianelli,⁶ and most recently, Russell, Batten, Collier.⁷ Many other observers⁸ have reported individual cases until the literature has grown to the point of establishing a lesion, which must hereafter be given a much more important place in the pathological anatomy of the nervous system than has heretofore been accorded it. To this end it seems desirable to report pathological findings with a considerable degree of care, and to determine as far as possible the characteristic features of the process under consideration. A tendency is already evident to subdivide the lesions thus far described into two classes, with relation to certain etiological factors, notably anemia. Many more observations are necessary before anything definite may be said on this point. In the meantime it is important to show that a process, distinct in certain essential particulars from other degenerative changes of the cord, occurs as the result of or associated with morbid physical conditions, which are as yet vague, and of which one may be anemia. It was this service

¹Lichtheim: Verhand. des Congresses für Innere Medicin, 1887, p. 84.

²Putnam: JOUR. NERV. AND MENTAL DIS., Feby., 1891.

³Dana: JOUR. NERV. AND MENTAL DIS., XXVI, p. 1, Jany., 1899, and several preceding papers.

⁴Minnich: Ztschft. für klin. Med., XXI, 1892, pp. 25, 265, and XXII, 1893, p. 60.

⁵Nonne: Arch. für Psych., XXV, 1893, p. 421.

⁶Bastianelli: Bull. d. R. Acad. Med. d. Roma., 1895-6.

⁷Russell, Batten, Collier: Brain LXXXIX, Spring, 1900, p. 39.

⁸See Russell, Batten and Collier paper for a full and recent bibliography.

which Putnam, followed by Dana, rendered in 1891. Lichtheim's preliminary work related to pernicious anemia, rather than to the broader question of cord changes following cachexias (toxemias?) of various sorts, and as such is hardly to be regarded as the forerunner of the broader field of investigation upon which we have now entered.

Classification and Nomenclature.—It is desirable for the sake of accuracy and further progress that a classification of the lesions under discussion should be made. This has as yet by no means been attained, due, no doubt, to a variety of causes. Chief among these was the insistence which had previously been laid upon so-called combined system diseases, through the work of Westphal and others, with the assumption that these disorders were as truly "systemic" in distribution as tabes, for example. Ormerod⁹ in 1885 published a critical digest on the "combination of lateral and posterior sclerosis of the spinal cord," in which he said that a multiple tract disease had been recognized, and also a sclerosis of columns not coinciding with known tracts, though too regular to be called in "the strictest sense diffuse." It is also of particular interest to note that Gowers,¹⁰ in his now classical lecture on ataxic paraplegia made certain statements in his description of the pathological anatomy of the condition, which bring it much more into the category of a diffuse lesion than of a systemic neurone degeneration in the modern sense. For example, he says that the posterior and lateral columns are both affected, but often less intensely in the lumbar than in the dorsal cord; that the root zone is less affected than in tabes; that at times the degeneration does not reach the posterior periphery of the cord; that the degeneration of the lateral columns is not often "systemic in character." In the light of the neurone theory it is likewise clear that from Gowers' description the degeneration of the posterior columns is also not systemic in character. Whether or not, in fact, a true combined neurone degeneration of the lateral and dorsal tracts exists is a matter which the present investigation does nothing to elucidate, but it is clear that many cases of so-called ataxic paraplegia are due to a much more extensive lesion than the

⁹Ormerod. *Brain* VIII, 1885, p. 110.

¹⁰Gowers: *Lancet*, July 3, 10, 1886, pp. 1, 61.

symptoms alone would warrant us in assuming.¹¹ At the same time it is at once to be admitted that the lesions observed in the class of cases under discussion have a quasi-systemic character, inasmuch as with practical constancy the dorsal and lateral columns are involved. It becomes necessary, therefore, to distinguish sharply between systemic in the old sense (Charcot) as applied to the cord alone, and systemic in the new sense as applied to nerve cells (neurones). The latter terminology, which is now alone admissible, is certainly excluded in these types of diffuse degeneration, and quasi-systemic, merely as a descriptive term, may alone be correctly employed. In 1891 Putnam used the term "system sclerosis of the cord, associated with diffuse collateral degeneration." Dana's former view was that Gowers' cases of ataxic paraplegia were "aberrant or complicated forms of tabes, transverse myelitis or multiple sclerosis,"¹² a view to which he no longer adheres. Russell, Batten and Collier¹³ have reopened the discussion of the matter in their latest paper, by questioning the justifiability of the name, which, however, they finally adopt, as less likely to lead to confusion than a more accurate one would be. The title of their paper is "Subacute Combined Degeneration of the Spinal Cord." They deprecate the use of the word "combined" as inaccurate, and too wide in its significance, but think that "subacute" will sufficiently differentiate this from other forms of disease with which it might otherwise be confused. This, so far as we know, is a new terminology, and one which is not sufficiently exact to command a permanent place in the literature. The use of the word subacute, for example, gives no idea of the extent of the pathological process, and is no doubt used merely in a clinical sense. Putnam's original "System sclerosis, associated with diffuse collateral degeneration," is a more accurate design-

¹¹See also Leyden, Goldscheider, "Erkrankungen des Rückenmarkes," 1895, p. 97 in Nothangel series. These writers are inclined on anatomical grounds to deny the usefulness or correctness of the term "combined system disease." See also Leyden: *Ztschft. für klin. Med.*, XXI, 1892, p. 1. "Ueber Chronische Myelitis und die Systemerkrankungen im Rückenmark."

¹²Dana. *loc. cit.*, p. 14. Dana's late terminology (Report at International Congress of Medicine, Paris, 1900), "Subacute Spinal Ataxia" is open to criticism from the fact that it lays stress upon a single symptom, and that not a constant one.

¹³Russell, etc., *loc. cit.*

nation, though perhaps unnecessarily long. We would suggest the simple term, "Diffuse Degeneration of the Spinal Cord." This terminology has the following advantages: It describes a process rather than a symptom; it is short and sufficiently descriptive; it distinguishes the lesion from myelitis, and lays stress upon the fact that it is an undoubted degeneration; it emphasizes the essential feature of the process, namely, its diffuse character, thereby removing the lesion from the so-called combined degenerations, where, as now generally admitted, it certainly does not belong. The term, furthermore, is sufficiently distinctive of a special pathological condition and should lead to no confusion. It may be that a further etiological subdivision of the group of cases may be necessary as our knowledge grows. In the meantime the most accurate provisional classification, which conflicts least with what has gone before, seems to us to be to regard the lesions as primarily degenerations and not inflammations, and as essentially diffuse rather than systemic in character.

Pathological Anatomy.—The features common to the general group of lesions are:

1. A diffuse degeneration for the most part limited to the cord, often in more or less discrete patches.
2. A constant involvement of the dorsal and lateral columns, without strict regard to neurone systems.
3. A predominance of the lesion in the cervical and thoracic regions.
4. The common freedom from degeneration of nerve roots, both motor and sensory, and peripheral nerves.
5. The practical non-involvement of gray matter.
6. Insignificant vessel changes.

A striking peculiarity in two of the cases, described also by several other observers, is the character of the degeneration, vacuolation with slight neuroglia proliferation. The occurrence of the degeneration in discrete areas, varying from segment to segment, is particularly characteristic, and does not occur in the same manner in any other condition. The work which has gone before and the many accurate descriptions of the pathological anatomy of the condition under consideration renders a repetition here wholly superfluous. A comparison,

however, of our findings with certain features of the findings of preceding writers is desirable. Putnam's¹⁴ paper, carelessly overlooked by many of the subsequent European writers, marks the beginning of the recognition of these diffuse lesions as due to a variety of causes, usually characterized clinically by general cachexia, and not solely by the existence of pernicious anemia (Lichtheim). The similarity of the lesions observed by Putnam to those noted by subsequent writers is clearly apparent from a review of the literature. The variations are, for the most part, in matters of unessential detail. Putnam and most recently Russell, Batten and Collier¹⁵ are inclined to consider that the process is partly systemic in character and partly diffuse. Putnam finds "a relatively chronic sclerosis in the posterior and lateral centripetal and centrifugal long tracts" and also "a more acute and recent degenerative change in adjoining areas, partly diffuse and partly systemic in distribution." Russell and his colleagues affirm that there are "obviously two distinct processes at work in relation to the alteration found in the spinal cords of these cases: 1. A local destructive lesion. 2. A system lesion." So far as our observation goes there is no necessity for the assumption of a double process; it is rather the same process manifested with varying degrees of intensity in different regions of the cord. Unquestionably the dorsal and lateral tracts show the deepest degeneration, due, no doubt, to causes of which we have as yet insufficient knowledge, but it is too great an assumption to regard this as an evidence of two distinct processes. Furthermore, the degenerations of these areas, however topographically at given levels of the cord they may appear systemic, clearly do not represent neurone degeneration, to which, as already urged, the word systemic should now alone be applied. This is shown, for example, by the fact that the dorsal nerve roots are usually not degenerated, nor is the dorsal root zone, nor the pyramidal tract of the lower cord segments in many cases. It seems to us, therefore, both more conservative and most in accordance with the anatomical appearances to consider that we are dealing with

¹⁴Putnam: *loc. cit.*

¹⁵Russell, etc., *loc. cit.*

a diffuse process, having no regard to actual neurone systems and at most merely quasi-systemic in character. Putnam also found in his original work on the subject a "degeneration of moderate degree in the nerve roots and peripheral nerves," a finding which subsequent investigators for the most part do not substantiate. In our five cases the nerve roots were remarkably free from degeneration. In Case III (Plate II, Fig. 4) the dorsal roots show occasional areas of degeneration (see also description of microscopic appearances) which are clearly not of the neurone type, but rather suggestive of some relatively slight, possibly vascular, disturbance. To this we would attach considerable importance as perhaps throwing light on the character of the cord process. Our somewhat meager observations would also tend to confirm the generally accepted opinion that peripheral nerves are only exceptionally involved to the extent of visible degenerations. The gray matter, likewise, is usually spared; what changes we have observed are slight and uncharacteristic, consisting essentially in over-pigmentation of ventral horn cells.

If the extensive degenerations are due to vascular causes, certainly the objective appearance of the vessels gives no basis for this assumption. The larger vessels are in all cases normal, and the smaller show only occasional hyaline degeneration, standing in no discoverable relation to the areas of degeneration. It is, however, to be said that Nonne¹⁶ found at times an evident relation of diseased vessels to areas of degeneration, a fact noted also by Minnich. In these instances the hyaline change was limited to the capillaries.

Pathological Histology.—A study of the minute changes in the diffuse degenerations is of importance in view of possible errors in pathological diagnosis. It is to be distinguished from true system diseases, a matter already sufficiently discussed; from myelitis; from multiple sclerosis; from simple softening. There is a tendency, still strongly observable, particularly among older writers (*e. g.*, Leyden), to use the term myelitis in a very general sense, quite regardless of any evidences of inflammation; the words subacute or chronic are commonly employed as modifying adjectives to describe varieties of this so-

¹⁶Nonne, *loc. cit.*

called myelitis. This tendency should be combated. There is ample evidence to show that a true myelitis exists which has all the histological appearances of a true inflammation; it is unnecessary to apply the term to conditions in which the histological appearances do not show evidences of inflammation. We also know that primary degenerations are of common occurrence in the nervous system (tabes; amyotrophic lateral sclerosis), similar to parenchymatous degenerations in other organs. The lesions under consideration have merely the appearances of a non-systemic primary neurone degeneration, not dependent upon an antecedent inflammation (myelitis). It seems desirable, therefore, to take the diffuse degenerations out of the vague category of myelitis and consider them simply as degenerations, until our knowledge of their etiology permits of a more accurate classification. The term myelitis implies a causative agent not yet proved to exist. The differentiation from multiple sclerosis should offer no difficulties. The areas of degeneration are not discrete; they show a constant quasi-systemic grouping; they are not characterized by a primary overgrowth of neuroglia. Simple softening, although it may no doubt occur in the progress of the disease (Putnam, Dana) is certainly not the essential process. There is no evidence of the occlusion of vessels, the contour of the cord is not altered, the process shows evidence of chronicity, and histological signs of softening are lacking. Appearances worthy of special note in the process, apart from the distribution of the lesions, are the character of the myeline degeneration and the behavior of the neuroglia. Individual nerve fibers are much swollen, the myeline sheath is stretched, as it were, giving the appearance of a vacuole, in which not infrequently a relatively normal axone may be distinguished. This vacuolated appearance (Plate I, Figs. 1, 2; Plate II, Fig. 3) is no doubt to be explained by the rapidity of the degenerative process.¹⁷ The excessive number of fatty cells (Plate I, Fig. 1) furthermore bears out this supposition. This vacuolation of nerve fibers has been frequently described before, and derives its main interest from the fact that it is an index of the manner of development of the patho-

¹⁷A similar appearance, though much less marked, we have observed in the cord from an early stage of tabes, the patient dying of an intercurrent disease.

logical process, and possibly may have a bearing on the occasionally observed rapid exacerbation of symptoms. We are not able, however, from the pathological appearances to account for the division of the clinical symptoms into three distinct stages, as given by Russell, Batten and Collier.¹⁸ In some instances a perfectly typical neuroglia sclerosis, as seen, for example, in a late stage of tabes, is observed side by side with a rapidly progressing process of the type just described. The behavior of the neuroglia is of interest from the fact of the small tendency to proliferate frequently shown. This is no doubt due in part to the rapidity of the whole degenerative process (Nonne). It is furthermore possible that the general impoverishment of the part through poor or vitiated blood supply may so far reduce the vigor of the neuroglia that its normal compensatory hypertrophy is impossible. The same cause, in other words, which leads to the primary nerve degeneration may also prevent the growth of the neuroglia.

As we have already indicated, it seems to us too soon to make either clinical or pathological divisions in the general group of diffuse degenerations, and particularly to attempt the demonstration of lesions peculiar to anemia. Bastianelli,¹⁹ for example, has maintained that in cases due to pernicious anemia, the sclerosis is not so compact, and the lateral columns are little affected. Russell and his colleagues, who are in general sceptical of the etiological role of anemia, maintain that in no cases of fatal anemia have the changes found post-mortem been in any way comparable to those so characteristic of the subacute combined degeneration under discussion. From both of these views we must dissent. Our Case V. unquestionably died of pernicious anemia,²⁰ and showed post-mortem the most compact and sharply defined degenerations of any of our five cases. A finding which also does not tally with Russell's somewhat dogmatic statement.

Etiology.—The final and important question of the cause of the diffuse degenerations has been discussed in Dr. Putnam's clinical report. An excellent résumé of the matter is also to

¹⁸Russell, etc., *loc. cit.* See also the foregoing clinical report.

¹⁹Bastianelli, *loc. cit.*

²⁰The blood was examined during life by entirely competent persons, and the characteristic blood alterations found. The course of the disease was also characteristic.

be found in Russell, Batten and Collier's paper, to which we have repeatedly had occasion to refer. We are in general agreement with the views clearly expressed by these writers that the peculiar and relatively constant distribution of the lesions in the cord depends upon the anatomical arrangement of the pial blood vessels, an idea first advanced for combined lesions by Marie. This in no way implies actual disease of the vessel walls with thrombosis, and consequent anemic necrosis, but simply that under the influence of a cause, as yet unknown, but probably toxic, those areas of the cord most deficiently supplied with blood under normal conditions, are likely to suffer first under abnormal conditions. The quasi-systemic character of the process is due to the proneness which certain long tracts are known to have to undergo degeneration from various causes, as observed, for example, in tabes or amyotrophic lateral sclerosis. It is clear that the field of future study in this, as in many other conditions of disease, lies in a discovery of the ultimate cause of the degenerative changes. Until this is done further classification may well be deferred.

The general conclusions derived from this study are:

1. That a well-defined lesion of the nervous system particularly localized in the cord exists, which may for the present be termed simply "diffuse degeneration."
2. That no fundamental characteristics of the lesion have been found depending on different causes.
3. That anemic states have been shown at times to be a concomitant condition, but not necessarily a cause.
4. That the actual causes are still wholly obscure.

Description of Plates.

Fig. 1. High power. Marchi, Van Gieson stain. Field taken in a rapidly degenerating area (Case II), showing vacuolated nerve fibers, very numerous fatty cells and disintegrating myelins, with unproliferated neuroglia.

Fig. 2. Weigert stain. Cervical cord; Case II, showing areas of degeneration. The line of undegenerated fibers between the columns of Goll and Burdach is noteworthy, also the sparing of the dorsal root zones.

Fig. 3. Weigert stain. Cervical cord; Case III, showing typical more or less discrete areas of degeneration. Nerve roots essentially normal.

Fig. 4. Same. Lumbar cord; degeneration limited to dorsal col-

PLATE I.

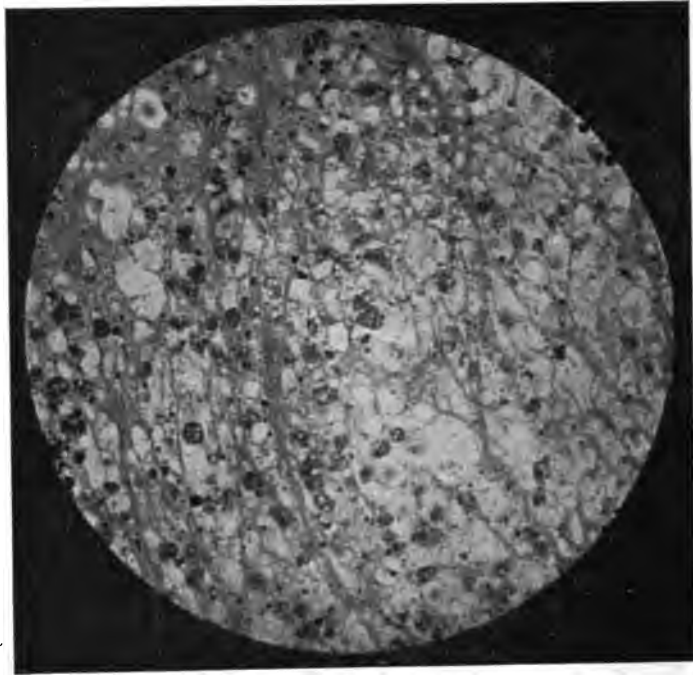


Fig. I.



Fig. II.

PLATE II.

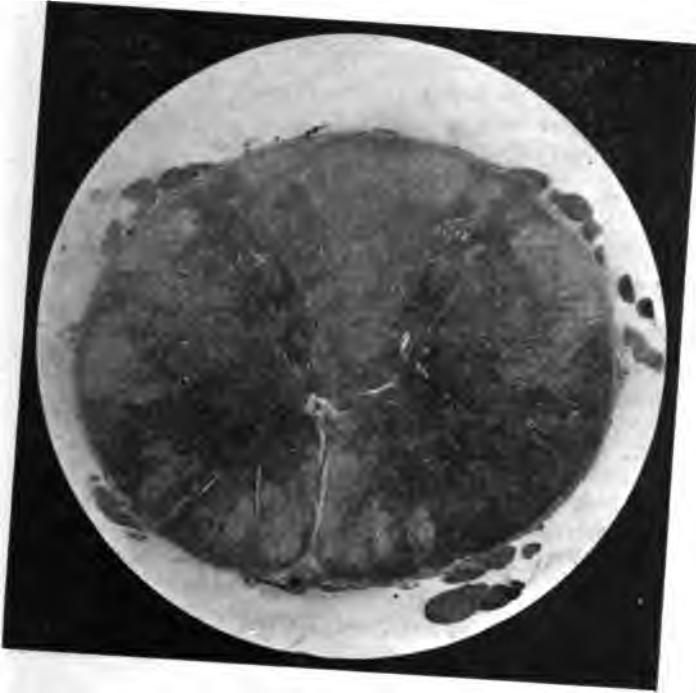


Fig. III.

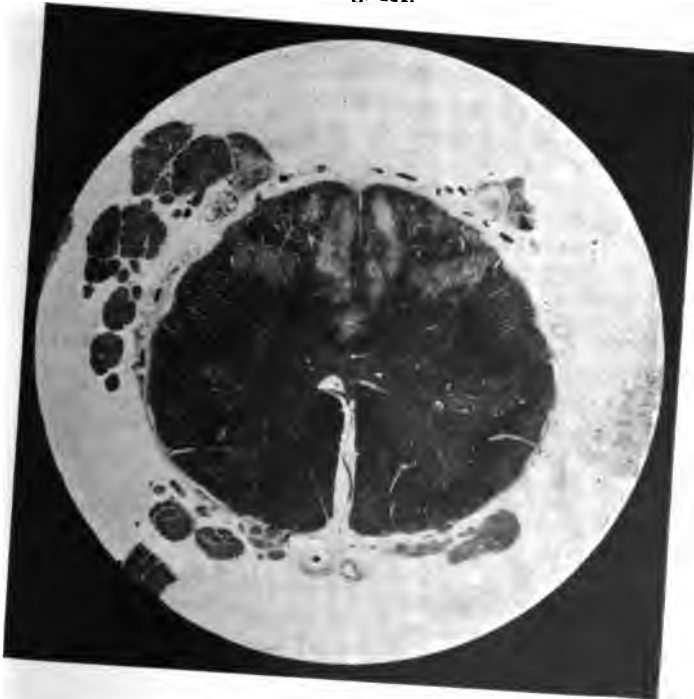


Fig. IV.

umns. Patches of degeneration in dorsal nerve roots. Ventral nerve roots normal, though with low power there is an appearance of degeneration on the right side.

DISCUSSION.

Dr. Langdon said he had perhaps seen a half-dozen cases which he would have classified as postero-lateral sclerosis, in only one of which, however, had there been a blood examination. This one was a case of typical pernicious anemia and the cord was in process of study. According to his observations we have two groups of pernicious anemia—one with, the other without, this spinal degeneration. He had followed to the end a few cases of marked pernicious anemia, and had an opportunity to test them within a few weeks of death without the slightest evidence of symptoms that would indicate a lesion of the posterior and lateral columns.

He had also seen recently a lady of 38 years with a spleen extending down to Poupart's ligament and three inches to the right of the umbilicus, and her nervous symptoms were exceedingly vague. A most careful examination did not show any important, even functional, alteration. She presented a somewhat anemic appearance, not excessively so, but blood examination showed a spleno-myelogenous leukemia, with one white corpuscle to six or eight of red; and yet that patient came more than 15 miles to his office and did not consider herself very sick, except for the large spleen. These cases rather make the spinal symptoms in other patients embarrassing to explain.

He did not think that we can say that in every case of pernicious anemia we will necessarily have degeneration in the posterior and lateral tracts. This would suggest that these degenerations, when they do occur, are possibly the expression of a pre-existing degenerative tendency which is developed by the presence of the nutritional defect. The two are not necessarily associated with each other. That would be his own view of it from the cases that have been followed to the end without developing spinal symptoms.

Dr. W. G. Spiller asked Dr. Putnam to express a little more clearly whether he regarded these forms of degeneration that occur in pernicious anemia as systemic. There is a difference of opinion in regard to this point by those who have studied the spinal cord in pernicious anemia. Dr. Spiller wished to know how Dr. Putnam explained the degeneration of the posterior columns. The degeneration appeared to the naked eye to be systemic; and Dr. Putnam had stated in his remarks that the portions of the posterior columns, where the posterior

roots enter, were not degenerated; and yet the posterior columns presented the appearance of ascending degeneration. Dr. Spiller was much interested in that subject at present and had been for some time. He had seen in several cases degeneration of the posterior columns without disease of the posterior roots and had found this also in amyotrophic lateral sclerosis, in the upper part of the thoracic cord. It has been supposed that in these cases the degeneration of the posterior columns is really a degeneration of the posterior roots, showing itself only in portions more remote from the cell-bodies. By others a degeneration of the posterior columns with integrity of the posterior roots has been regarded as an endogenous alteration. It was probable that if Dr. Putnam had had more time to present the paper by himself and Dr. Taylor, Dr. Spiller's question would have been unnecessary.

Dr. J. J. Putnam said he had as yet no positive opinion on the points which Dr. Spiller mentioned. Dr. Taylor thought that the nerve-roots did not suffer, the primary change being mainly or wholly in the cord. It has been maintained that these changes are focal and then coalesce, and that seems, in some cases, to be true, but on the whole Drs. Putnam and Taylor's specimens did not sustain this view as a general one. Posterior degeneration in the cervical region was very marked, but not universally greater there than elsewhere. The vessels were not much altered and the reference of the posterior degeneration to the fact that the circulation in the posterior column of the cord is less than that in the ventral part would not be a perfectly satisfactory explanation, for occasionally the uncrossed portion of the antero-lateral tract is involved, in spite of being in the more vascular part of the cord.

Dr. M. Prince said he was permitted to see these sections before coming to the meeting and got the impression from them that the areas of degeneration, in the posterior column, for instance, were not continuous throughout the whole column, but at certain levels the degeneration became limited or ceased, and then at a different level appeared again, and so on. This would seem to negative the idea of the disease being one of the regularly recognized system diseases and would bear out Dr. Putnam's view of the pathology. He would like to ask Dr. Putnam whether this was not so.

Dr. J. J. Putnam said he could not speak definitely, but the clinical symptoms seem to show that we have to deal in these cases with a special disease which is just as definite as tabes. The anatomical lesions are not explained. In one case of thirteen years' standing they were very slight indeed.

NEW YORK NEUROLOGICAL SOCIETY.

November 6, 1900.

The President, Dr. Frederick Peterson, in the chair.

A CASE OF PARALYSIS AGITANS WITHOUT TREMOR.

Dr. M. G. Schlapp presented this case. The chief features were the rigidity of the muscles, the expressionless face and the position of the arms, body and hands. The flexor muscles were more contracted than the extensors. There was no tendency to fall in any particular direction.

A CASE OF PARALYSIS OF THE DUCHENNE-ERB TYPE.

Dr. Schlapp also presented a man who six weeks ago had fallen from a bicycle, striking his shoulder. He had been unconscious for five hours. The case was interesting because the anterior pectoral muscles were affected. There was complete reaction of degeneration in the pectorals, biceps and the coraco-brachialis, and incomplete in the triceps and supinators. There was a peculiarly distributed area of anesthesia showing involvement of the musculo-spiral and musculo-cutaneous nerves chiefly. The lower part of the pectoral muscle showed some slight response to the faradic current. The lesion evidently implicated the fifth and sixth roots of the cervical plexus. As the anterior thoracic nerves were involved it was not a perfectly typical case.

Drs. C. L. Dana and M. Allen Starr said that they had each seen a similar case.

A CASE FOR DIAGNOSIS.

Dr. J. Fraenkel presented a man, 40 years of age, a tailor by occupation, who said that he had been well until a year and a half ago. There was no family history bearing on his condition nor was there any history of any previous acute trouble. About eighteen months ago he had been pushed roughly off a street-car. On awakening the next morning at home he had been absolutely helpless, being unable to move his upper or lower extremities. After six months he had been admitted to the Lebanon Hospital, but had left there, according to the history, unimproved. On coming under the speaker's observation, an extensive eczema had been noted at once. On a second examination the shoulder joints had been found partially ankylosed, and the muscles surrounding them had appeared atrophic. There was also atrophy of the supraspinatus and infraspinatus, and slight atrophy of the serratus

muscle. The electrical reactions were not changed. A thorough examination of his nervous system had proved absolutely negative. There was a peculiar atrophic condition of the skin, and a condition of cyanosis of the peripheral parts. There was slight valvular disease of the heart. The diagnosis seemed to rest between rheumatism, a general trophoneurosis and general syphilis.

Dr. B. Sachs said that he had examined this man previously, and had been led to think of symmetrical muscular atrophies such as occur after arthritic processes. It was not usual, however, to have them quite so symmetrical. It did not seem to him to correspond to any of the dystrophies or any of the spinal forms of progressive muscular dystrophy. He had had a suspicion that the case might be one of leprosy.

Dr. M. Allen Starr said that when traveling in Norway some years ago he had seen a number of lepers, and had had his attention called to the existence of muscular atrophies in them. The peculiar appearance of the man's face had led him to think of leprosy without knowing Dr. Sachs' views on the case.

Dr. Fraenkel said that very careful inquiry had failed to elicit anything but the most positive statements that the man had been in perfect health up to the time of being thrown from the car. The man had come from the southern part of Russia. A dermatologist had seen him and had been told that leprosy was suspected, but he had replied that the thickening of the face was due to the previous eczema.

Dr. Schlapp said that Bechterew had described somewhat similar cases of "stiff back." There was a possibility of some of the nerve roots being affected.

Dr. C. L. Dana thought this case was one of rheumatoid arthritis and the condition of the skin the result of an eczema.

Dr. F. Peterson thought it was an anomalous type of chronic rheumatoid arthritis. The fact that the muscles reacted normally would tend to confirm this belief. It was certainly not a rhizomyelic spondylosis. This might, of course, be a case in which the spinal cord symptoms were developed later.

Dr. B. Sachs presented the spinal column and the shoulders from a case of rhizomyelic spondylosis. The heart also showed previous rheumatic disease.

SPASMODIC TORTICOLLIS AND ITS TREATMENT; REPORT OF TWO CASES WITH RECOVERY.

Dr. W. M. Leszynsky read a paper with this title. He said that wry-neck must be classified among the musculo-nervous disorders. The first case reported was that of Mrs. X.—, 36 years of age, seen by him in 1895. About seven years ago she had suffered from pain and stiffness in the muscles of the back of the neck for several days. She had been greatly worried for a number of years by a protracted lawsuit. There was no family history of nervous disease. In February, 1895, after a fall on the ice, she had begun to suffer from nervous attacks, and in June she had first noticed a

tendency of the head to turn towards the left. On examination she was fairly nourished, but anemic. There was frequent and well-marked tonic spasm of the right sterno-mastoid muscle. Her eyes had been examined and found normal. Her general condition was that of neurasthenia of the lithemic type. She was advised to rest in bed for three months and was given the usual tonics. After two weeks atropine had been injected into the affected muscles, the daily dose being increased slowly up to 1-80 of a grain. At this time the symptoms of atropine poisoning had been so severe that it was discontinued. For a few days after this the spasm of the muscles was decidedly worse. The convulsive attacks lasted about twenty minutes, were very violent, and were associated with marked impairment of respiration. Under the use of morphine and potassium bromide the paroxysms had gradually subsided in the course of two weeks. Subsequently various remedies had been employed, but without benefit. The urine was always acid and of high specific gravity. After four months there had been considerable improvement in her general condition, but not in the spasm of the muscles. The rest treatment had been continued for some time longer under the advice of the late Dr. E. C. Seguin, but she had finally rebelled and had gone home. Some months later a brace had been applied, and this had gradually controlled the convulsive movements. The brace had then been discarded, but some tonic spasm in the muscles had still continued. Although there had been no return of the clonic spasm there was still slight occasional tonic spasm of the upper segment of the trapezius muscle. This case pointed to a strong hysterical element, although the patient did not present the usual stigmata of this affection. There was undoubtedly also a lithemic condition.

The second case was that of a woman of 24, whom he had seen on October 24, 1897. At that time there had been a marked spasm which had existed for nearly eight months. She had suffered from migraine for a number of years, and there was no history of trauma. She was kept in bed and the usual rest cure methods employed for two months. The atropine injections had been used for about two weeks, and they had temporarily controlled the spasm. They had been discontinued after two weeks. She had made a complete recovery at the end of six months, and had remained well since that time.

The speaker said that in 1884 he had recommended the use of atropine in this class of cases. Since then he had employed it in 12 cases, and had found that in many cases it was unsatisfactory, and he now believed it should be looked upon

as simply an adjuvant to other measures. The prognosis depends upon the duration and the persistence of treatment. The principal therapeutic feature in every case should be the use of massage and the methodical education of the muscles and their co-ordinating centers. His attention had first been directed to this valuable method by Dr. Coggeshall, of Boston. It was a mistake to resort to surgical measures in the early stages of this disorder.

Dr. C. L. Dana said that in his experience if the wry-neck were pretty closely limited to the spinal accessory and sterno-mastoid, an early resection would often check the disease and prove most useful. He quite agreed with the reader of the paper concerning the treatment of the older cases.

ACUTE ATAXIA.

Dr. C. L. Dana read this paper, classifying acute ataxia as: (1) The acute bulbar and cerebellar ataxia; (2) acute spinal ataxia, and (3) acute peripheral ataxia due to multiple neuritis of the sensory type. He said that Ebstein had reported a case of acute ataxia with autopsy, and as patches of sclerosis had been found the case had been looked upon as one of multiple sclerosis in an early stage. The peripheral type includes those cases due to the sensory form of multiple neuritis. Up to recent times there had been no definite description of acute ataxia of spinal origin not due to tabes. In 1897 Dr. Strauss had, however, reported two cases occurring in men about thirty-four years of age without history of syphilis or other infection. The description seemed to the reader suggestive only of locomotor ataxia. The cases of acute ataxia first described by Leyden, and still referred to by him as acute bulbar ataxia, certainly had a strikingly characteristic clinical course, so that the name might have some clinical value. Special attention was called to five cases of non-tabetic spinal ataxia which were reported in the paper. The following is illustrative. A man of sixty on January 9, 1890, had begun to feel numbness in the feet, and in a few hours this had extended to the mid-dorsal region. He soon developed a tight sensation around the waist. Ten days later, on coming under observation, he had a staggering ataxic gait, and soon became tired. He could not stand with the eyes closed. He showed distinct loss of muscular sense, but no impairment of the functions of the rectum or bladder. The patient had gradually recovered, and was not well. In another case, that of a man, seventy-six years of age, syphilitic infection had occurred one year previously. Just after recovering from the attack of iritis he had developed a type of

ataxia like that described in the preceding case. In two other cases the disease had been in old people, but in neither of them had there been a history of syphilis. They both were victims of overwork, and both had presented symptoms of marked senility. It would seem that these cases were due to senile arterial changes, or due to syphilitic changes in the blood vessels of the spinal cord, causing hemorrhages or blocking of the vessels, or both. It was possible that in old age the syphilitic virus might lead to attacks on the posterior rather than on the lateral columns, so that the type would be ataxic rather than of the spastic-paraplegic type. All of his patients had recovered from the ataxia. The differential diagnosis must be made from an acute onset of a locomotor ataxia.

Dr. Joseph Collins said that his clinical experience had been somewhat different from that of Dr. Dana, so that he had been led to a very different conclusion regarding the etiology. Some of his cases had been in persons of about forty-four years of age without evidence of syphilitic infection. Sometimes there had been inability to walk in the course of a week. This had been associated with slight incontinence of urine, at times, and with sexual impotence. In these cases there had been none of the cardinal symptoms of multiple sclerosis, and no evidence of cardiac or vascular degeneration. This was a type of case which he had been accustomed to call "acute ataxia." A second class of acute ataxias was acute bulbar ataxias. One of these was a woman thirty-five years of age, who, about August 14, had begun to complain of dizziness and blurred vision. Shortly afterward, while dancing, she had become ataxic, and then had lain in bed for a long time with marked ataxia and with slight anesthesia of the face. The sense of position had been lost. Later the symptoms of bulbar involvement—regurgitation through the nose and bulbar speech—had appeared. The cases of acute ataxia with which he was familiar clinically were those presenting similar features to the ones reported by Dr. Sanger Brown, of Chicago, recently, in the *American Journal of the Medical Sciences*. Dinkler had come to the conclusion that the lesion must be somewhere in the corona radiata or in the large basal ganglion.

Dr. S. Ely Jelliffe said that he had had under his observation for three years a gentleman, thirty-six years of age, who had been infected with syphilis. He was a politician, and at the crisis of a campaign he had suddenly found himself unable to walk. On either side there had been ataxia confined to the lower limbs, and associated with some trouble of the bladder. He had been put on antisiphilitic treatment, and had been practically well in three weeks. He had remained well for a year, and then had had a sudden attack which had resulted in a typical spastic paraplegia. He had eventually died from this, and his spinal cord had exhibited the usual lesions of that affection. In the first attack there had seemed to be an acute ataxia due to involvement of the minor blood vessels.

Dr. Schlapp reported the case of an intemperate man of fifty. Three years ago he had developed ataxia and now had a disturbance of tactile and pain sense in the feet. Electrical reaction was diminished. The case looked to him like a peripheral neuro-tabes. The Romberg symptom was present. The knee-jerks were slightly exag-

gerated. The case might perhaps be classed as an acute ataxia of the peripheral type.

Dr. Fraenkel said that from the pathological standpoint the condition probably occurred quite frequently, and was often overlooked. He would like some points on the differential diagnosis between organic and functional conditions. The symptoms given by Dr. Dana were not sufficiently objective.

Dr. J. F. Terriberry commented upon the fact that these old people reported by Dr. Dana should have recovered so readily if the vascular system had been so damaged. For this reason he doubted if the vascular system had been especially at fault. Ataxia was a symptom rather than a disease, and the attempt to consider it as anything but a symptom was likely to lead one astray. He was in favor of considering these cases that recover late in life as of neuritic origin.

Dr. Dana said he had not met with the class of cases described by Dr. Collins. Dr. Brown's cases did not seem to be exactly cases of pure ataxia, and hence he had not referred to them. One must distinguish between an ordinary unilateral ataxia, such as occurs from acute softening of the pons or medulla, and the acute bulbar ataxia of Leyden, which is bilateral. It was a common experience to see old people with hemiplegia and hemorrhage recover in spite of the degenerated condition of the blood vessels.

A CLINICAL MEETING OF THE CHICAGO NEUROLOGICAL SOCIETY.

November 1, 1900.

Dr. Hugh T. Patrick, Vice-President, in the chair.

INTERMITTENT CLAUDICATION AND ATYPICAL SCIATICA.

Dr. Hugh T. Patrick presented a patient with what he considered to be atypical sciatica dependent principally upon arterial disease and hence closely related to the intermittent claudication of Charcot.

In this connection he briefly related the principal features of a case which he had hoped to also have present in person. The patient was a woman, sixty-six years old, who had been in fairly good health until about six months before, when she began to have trouble with the lower extremities. The legs below the knees became slightly swollen and somewhat painful, especially at night, and she was greatly annoyed by paresthesiæ and muscular cramps. Within the last few weeks tingling and numbness had appeared in the last two fingers of the right hand, and she said that in cold weather the fingers turned greenish-white and seemed to be dead. In addition to the sensory symptoms, she complained of great weakness of the legs, particularly after walking a short distance, and upon examination it was found that although she started off fairly well, after walking about twenty yards the steps became small and somewhat uncertain and thereafter progression rapidly became more difficult until she was compelled to come to a full stop. The pulse was 95 and small and was not to be felt in the dorsal artery of the foot on either side. There was slight anesthesia of the foot and the Achilles jerks were absent.

The patient presented was a man sixty-nine years old, who, twenty-eight years before, had had severe sciatica beginning on the left side, afterwards extending to the right and lasting more than four years. Twelve years ago he had a similar attack, but active treatment in the beginning limited its duration to a few weeks. The present trouble began nine years ago much as the previous attacks had done, but was less acute and almost immediately involved both sides. From the first the pain was not severe, indeed, could scarcely be described as a pain at all, but was rather a sensation of drawing or pressure with intensely disagreeable paresthesiæ and intense restlessness of the legs. Although the discomfort was greater in the region just below the sciatic notch on either side, none

of the ordinary signs of sciatica were present. The patient complained particularly of the fidgety feeling and paresthesiæ which prevented him from getting to sleep, and of the weakness and increase of the sensory symptoms caused by walking. Examination showed a senile heart with a systolic murmur and a distinct, although not advanced, arterio-sclerosis. For some time the patient had been troubled with attacks of transient dizziness. The pulse in the dorsal artery of the foot was good and the urine normal.

SYRINGOMYELIA IN A NEGRO.

The next patient presented was a pure negro, twenty-six years of age, who had noticed at the age of fifteen or sixteen that the right hand was not so strong as formerly. From that time the progress of the disease had been steadily forward until at the present time he gave the symptoms of syringomyelia extending from the lumbar enlargement to the nucleus of the sixth nerve. The distribution of the sensory disturbance was of particular interest. There was practically no disturbance of the tactile sense, analgesia was limited to the right arm and right half of the body in front, from the chin to the groin and behind from the vertex to the buttock, while thermo-anesthesia was present in this area and also involved the left arm, the left lower extremity from the crest of the ilium down; and the right lower extremity from the knee down, leaving uninvolved only the left half of the body from the clavicle to the crest of the ilium and the right thigh.

Dr. Elbert Wing reported a case of morphine habit treated by the administration of sodium bromide in very large dosage. The patient was the wife of a physician and was formerly a trained nurse. She was twenty-eight years old, in excellent health and was taking from ten to fifteen grains of morphine hypodermically daily. Her heart, lungs and kidneys were normal. There was constipation.

The treatment was commenced with two drachms of bromide of sodium given in a half glass of water every two hours through the day until five doses or 600 grains *per diem*, had been given. Through a misunderstanding the dose was exceeded twice. Direction was given that the patient was to have morphine when she asked for it. The diet was restricted and mainly of milk.

The first day of treatment 600 grains of bromide were given. The pulse ranged from 88 to 90, temperature, 98.2 to 99, and respiration, 22. The second day 720 grains of bromide were given. The patient slept most of the previous night and complained upon waking, of muscular soreness. The

pulse ranged between 76 and 84, temperature, 98.4 to 98, and respiration from 16 to 18. A cathartic was given. Upon the third day 960 grains of bromide were given. Patient slept well the previous night, but not at all during the day until 9 P. M. Bowels moved freely. The pulse was 70 to 80; temperature, 98 to 98.4; respiration, 18 to 22. The interne, thinking the heart was weak, gave 1-30 grain of strychnia at 10.30 P. M. The fourth day the patient awakened at 5 A. M., having slept eight hours, and asked for morphine. One grain was given and the dose repeated at 10 A. M. During the day she slept about six hours, but was easily awakened. Nine hundred and sixty grains of bromide were given. There was burning pain in the stomach and patient did not sleep from 6 to 11 P. M. Pulse was 88 to 100; temperature, 98 to 98.8; respiration, 20 to 30. The fifth day was a repetition of the preceding days, save considerable cyanosis and the urine, which was previously free and normal, now contained granular and hyaline casts, but no albumin. This day 600 grains of bromide were given. Toward evening the patient was delirious and restless, sneezed occasionally and had some hic-cough. Twelve grains of trional were given by mouth and two enemata of chloral hydrate, each containing 20 grains, were given, but only one retained. One-thirtieth grain of strychnia was given. On the sixth day no more bromide was given. Moist râles were heard over the lower third of the left lung and respiration grew more hurried, growing as rapid as 50 to 96. There was dullness over the lower part of the left lung. Morphia, strychnia, atropia and glonoin were used hypodermically and oxygen gas was given by inhalation every few minutes. After the development of lung symptoms, the progress of the patient was steadily downward until death on the seventh day. The urine obtained by catheter on the last day showed some albumin and granular and hyaline casts.

The apparent effects of the bromide in this case were extreme restlessness, delirium, rapid and weak pulse, rapid respiration, somnolence, cyanosis, moderately increased flow of saliva and, indirectly pneumonia, nephritis and death.

Dr. Wing gave a résumé of Dr. Neil Macleod's nine cases, and two of Dr. Church's, treated by sodium bromide, the treatment being instituted for the cure of drug habits, either morphia, chloral or alcohol.

Tabulated statement of the amount of sodium bromide given:

Macleod's cases—

No. 1. 430 grains in 3 days.

No. 2. Not stated.

- No. 3. 1,080 grains (33 drachms) in 4 days.
No. 4. 1,380 grains (23 drachms) in 3 days.
No. 5. Not stated.
No. 6. 2,160 grains (36 drachms), time not stated.
No. 7. 960 grains (16 drachms) in 2 days.
No. 8. 960 grains (16 drachms) in 2 days.
No. 9. 1,340 grains (21½ drachms) in 3 days. Septic poisoning for four months; temperature, 105 degrees; no post-mortem.

Dr. Church's cases—

- No. 10. 2,860 grains (48 drachms, less 20 grains) in 5 days.
No. 11. 3,530 grains (7 ounces, 3 drachms) in 43 hours.

Case of this report—

- No. 12. 3,960 grains (8 ounces, 2 drachms) in 5 days.

Mortality: Macleod's report, (1) Pneumonia, (2) Septic; Church's report, (3) Nephritis; this report, (4) Pneumonia. Four in 12 cases, 33 1-3 per cent.

Amounts of bromide in the fatal cases: Macleod's smallest, 1,320 grains; Macleod's largest, 2,160 grains; Church's, 3,530 grains; this report, 3,960 grains.

Effects of the large doses of sodium bromide given:

Primary—(1) Great restlessness and delirium. (2) Diminished cardiac power shown: (a) in slow pulse of some cases and (b) in rapid pulse in others. (3) Cyanosis, marked and independent of pulmonary embarrassment. (4) Increased amount of secretion in mouth and throat.

Secondary—(1) Pneumonia, 2 cases. (2) Nephritis, 2 cases. (3) Septic conditions.

Dr. Macleod thinks the method without or with little danger even at home. Dr. Church thinks it may be undertaken with full hospital facilities. The cases so far reported seem to point to the following conclusions: The method is not without danger and should not be undertaken with heart, lungs or kidneys not normal and not in septic conditions. Macleod's original dosage, viz., one ounce the first day, one ounce the second day, one-half ounce the third day, if necessary, should not be exceeded without first waiting twenty-four hours. If then resumed, it should be with great caution. In any case very perfect care should be taken to guard against taking cold.

In the discussion which followed Dr. Church said that while the bromide treatment did cure the opium habit, it nevertheless remained a fact that 33 per cent. of reported cases had proven fatal and emphasis was laid upon the fact that large doses of bromide might be dangerous. Dr. Moyer said that Dr. Bannister and himself had presented in 1879 a joint

paper read before the American Neurological Association, upon bromide mania. It was clearly shown that small doses of bromide would cause mania in certain cases of otherwise perfectly normal individuals. Certain German observers have noted the same thing. Bromide is certainly capable of making most profound body disturbance. Mention was made of a patient losing fifty pounds of weight in three months, while taking moderate doses of bromide. At another time the same patient lost thirty pounds in a similar way, but regained weight after discontinuing the salt. Dr. Moyer considers the bromide treatment of the opium habit and of alcoholism as unsatisfactory and that we have better and safer means.

Dr. Lodor called attention to the fact that the dose, as given, of bromide, did not represent the amount in circulation when the bromide was being given continuously. If 400 grains be given at a dose in twenty-four hours, but one-half of said dose will have been excreted and Drs. Bill, Quincke and Ware have severally proven that in forty-eight hours after a given dosage a sixth of the dose still remains in the circulation and traces may be found in the urine weeks after cessation in the use of the bromide. It would then be very essential to use extreme care in continuing massive dosage of bromide.

Dr. Herrick quoted Dr. W. Mitchell as authority for untoward symptoms in the administration of the bromide which symptoms may or may not disappear upon withdrawal of the drug.

Dr. Kuh maintained that the relatively smaller doses suggested by Dr. Wing and even the withdrawal of the drug for twenty-four hours, did not constitute a safeguard. A case is mentioned where even 20 grains of the bromide four times a day had caused alarming symptoms.

Dr. Patrick related a case of alcoholism when one drachm of the bromide was given every hour until 16 drachms had been given. The symptoms then became alarming—the pulse and respiration were slow with cyanosis and incoherency. After thirty-six hours there was a gradual improvement and the treatment was successful.

Dr. Brower mentioned a case where 15 grains of bromide caused, upon several occasions, maniacal symptoms.

Dr. Wing closed the discussion with emphasis upon smaller doses of bromide and where toxic symptoms appear, the withdrawal of the drug for at least twenty-four hours, before further treatment.

Periscope.

CLINICAL NEUROLOGY.

UNE COMPLICATION DU TABES NON ENCORE SIGNALÉE (A Hitherto Unnoted Complication of Tabes). SABRAZES ET FAUQUET (Nouvelle Iconographie de la Salpêtrière, No. 3, May-June, 1900, p. 253).

A unique case of spontaneous fracture in a tabetic consisting of a complete fracture of the alveolar edge of the two superior maxillary bones, which took place during the extraction of a canine tooth, together with a large breach of the buccal sinus, simulating a buccal mal-perforant. The patient, fifty-four years old, presents typical symptoms of tabes. On account of a very severe toothache he consulted a dentist, who, in extracting the right superior canine in the usual manner, found that the whole of the alveolar edge of the superior maxilla, which supported eleven teeth, came away. This large fracture extended to the palatine vault, thus forming a large orifice connecting the buccal cavity with the maxillary sinuses, liquids introduced into the mouth found their way easily into the nasal cavities. Gradually the break cicatrized at the level of the transmaxillary gap, leaving an open space of 2 or 3 mm. and communicating only with the right maxillary sinus. The author calls attention, in concluding the article to the following two points: The fracture can be regarded as spontaneous because it followed a simple extraction of the tooth in which the gravity of the accident is altogether out of proportion to the slight intensity of the traumatic cause. This possibility should be thought of in operating on the teeth of tabetics. The analogy which this case presents to those tabetics attack with resorption of the maxillary bone and the mal-perforant of the buccal region is noted. SCHWAB.

ZUR FRÜHDIAGNOSE DER TABES (The Early Diagnosis of Tabes). ERB (Münchener medicinische Wochenschrift, 1900, No. 29, S. 989).

The author emphasizes the importance of an early diagnosis in tabes, and speaks of the difficulties attending its early recognition in many cases. Falling back on his well known opinions on the subject, he insists that where there is a history of previous syphilis, and even two or three of the characteristic symptoms of tabes, such as entire or one-sided immobility of the pupils, with lost or diminished reflexes and sensory or visceral disorders; in the great majority of cases a diagnosis of tabes is justified, and treatment addressed to this disease should be applied. The histories of a number of illustrative cases are given. ALLEN.

TABES TROPHIQUE. ARTHROPATHIES, RADIOGRAPHIE (Trophic Tabes. Arthropathies, Radiography). E. DUPRÉ and A. DEVAUX (Nouvelle Iconographie de la Salpêtrière, 13th Year, September-October, 1900, p. 498).

A case illustrated with radiographs, which is a continuation of the series published in the March-April number of this journal. A

tabetic with the usual symptoms. Seventeen years after the initial symptom, which in this case was an ocular paralysis, the left knee began to swell slowly and without pain. Two years later the right knee began to show the same process. The two articulations are absolutely painless, susceptible of lateral movement, which are accompanied by cracking sounds easily heard. The following conclusion is drawn from a study of the radiographs in this case and from the series to which allusion has been made. It is possible to distinguish in tabetic osteopathies a type somewhat different from the classic form, not in its nature or results, but in the more fibrous than osseous nature of its distribution. The name of tabetic periarthopathy can be given to this form. SCHWAB.

THE CLINICAL FORMS AND PATHOLOGICAL ANATOMY OF SPINAL SYPHILIS. WILLIAMSON (Edinburgh Med. Journal. October, 1900. P. 322).

The author recognizes the following forms of spinal syphilis:

1. Disease of the bones of the spinal column producing symptoms of compression of the cord or nerve roots. Very rare.
2. Chronic meningitis without indications of involvement of the cord proper. Also very rare.
3. Meningomyelitis, the most common form of spinal syphilis. In this there is special tendency to involvement of the vessels.
4. Acute syphilitic paraplegia. This comes on very rapidly, in contrast to the preceding forms, and may be accompanied by sensory disturbances of varying character. In one case examined by the author there was marked disease of the vessels and extensive thrombosis in them.
5. "Erb's Spinal Paralysis." Characterized by a spastic paresis or paralysis, but with little or no disturbance of sensation. As to whether this should be admitted as a special type has been considerably discussed. The author has examined one case, finding some arteritis, slight meningitis, a gummatous patch in the right antero-lateral column, in the posterior columns of the lower dorsal region, and some irregularly distributed sclerotic changes specially prominent about the periphery of the cord in the dorsal region.
6. Paraplegia, with combined degeneration in the posterior and lateral columns.
7. Gummata of the cord and meninges.
8. Anomalous forms, which may simulate various non-specific lesions. As pointing to the probably syphilitic nature of a doubtful case, the following points are important: (1) The history of previous syphilitic infection. (2) Signs of present or previous syphilitic disease. (3) The presence of cerebral symptoms (associated syphilitic cerebral disease). (4) The relatively slight intensity of the cord disease as compared with the area involved. (5) The occurrence of Brown-Sequard paralysis. (6) Fluctuations in the intensity of the nervous symptoms. (7) Multiplicity of lesions. The prognosis, though not favorable, is better than in other chronic spinal cord affections. Treatment should be prompt and vigorous. ALLEN.

BEOBACHTUNGEN ÜBER DIE PROGRESSIVE PARALYSE WÄHREND DER LETZTEN VIER JAHRZEHNTE. (Observations on General Paresis During the Last Four Decades.) BEHR (Allg. Zeitschrift für Psychiatrie, 1900. LVII, S., 719).

The author has studied the case histories of 575 male and 108 female paretics cared for at the Hildesheim Provincial Asylum, from

1858 to 1899 inclusive. His cases are distributed into groups, each representing the admissions for a five-year period between the dates mentioned. Clinically he recognizes an agitated, a typical and a dement form for the males, adding thereto a depressive form for the females. His cases are carefully tabulated, and he draws the following conclusions:

The frequency of general paresis in both men and women has very considerably increased in the last four decades. In men the form of the disease has markedly changed, the agitated and typical varieties having decreased in comparison to the cases of simple progressive dementia. In women this alteration of the clinical picture is not apparent. Remissions seem slightly more frequent in both sexes. Paralytic attacks (epileptiform and apoplectiform) are more current, mainly on account of occurring more frequently in the dement type of disease, and are observed oftener in women than in men. The *average* age at which the disease begins has not altered, though more cases are observed in young subjects than formerly. The duration of the disease remains practically the same, averaging about 2 years and 6 months for the men and 2 years and 8 months for the women. The age at death averages about the same as in the earlier periods.

ALLEN.

UN CAS D'AMYOTROPHIE PROGRESSIVE DITE "ESSENTIELLE" (A Case of So-called Essential Progressive Amyotrophy). A. ABADIE AND J. DENOYÉS (Nouvelle Iconographie de la Salpêtrière, 4, July-August, 1900, p. 415).

The old arbitrary division between the different types of essential muscular atrophy has not been able to stand before the discovery of transitional forms. It is no longer a question between the types of Leyden, Möbius, Duchenne, Erb, Landouzy-Dejerine that the intermediary forms should be sought for, but rather between the myopathic atrophies on one side and the myelopathic atrophies and the neurotides on the other. The case in question is a child eleven years old, with complete absence of family history, no organic or functional nervous disease on the part of the parents. The patient presents, however, traces of degeneracy, a fact that has been studied by Fabre in relation to myopathies. The disease commenced very early, affecting the lower extremities, then the thorax, and lastly the upper extremities and the hands. The neck muscles are also involved. The evolution has been progressive and symmetrical, with a slight predominance on the left. No fibrillary tremor and no sensory disturbances. The condition of infantile spinal paralysis, lateral amyotrophic sclerosis, syringomyelia, progressive muscular myelopathy (Aran-Duchenne) and peripheral neuritis were easily excluded. There remains then the essential myopathies and the transitional forms. At first sight this patient should be classed as a pseudo-hypertrophic paralytic or simply as a primary progressive myopathic. Two specific characteristics were, however, lacking in this case: first, family character; second, absence of the reaction of degeneration. The case then is to be regarded as an atypical and as a transitional form.

SCHWAB.

UEBER ACUTE ISCHÄMISCHE LÄHMUNG NEBST BEMERKUNGEN ÜBER DIE VERÄNDERUNGEN DER NERVEN BEI ACUTER ISCHÄMIE. (Concerning Acute Ischemic Paralysis, with Remarks on the Changes

of the Nerves in Acute Ischemia.) M. LAPINSKY (*Deutsche Zeitschrift für Nervenheilkunde*, Vol. 17, Nos. 5 and 6, p. 323).

The paralysis resulting from acute ischemia has been supposed to be myogenic, and associated with early contracture. Lapinsky has tied the main artery of one of the posterior limbs in ten rabbits, and avoided any pressure upon the limb. The ischemic limb became rapidly paralyzed and cold, the paralysis was flaccid, and passive movements were not restricted. Sensation for pain, touch and pressure, as well as the cutaneous and tendon reflexes, disappeared, and quantitative changes in the electrical responses were obtained. Ischemic contractures did not occur. The microscope showed pronounced parenchymatous neuritis in those cases in which the collateral circulation did not develop until the fourth or fifth day after the operation. The muscles were not normal, but the paralysis was believed to be of nerve origin.

SPILLER.

L'ATROPHIE OLIVO-CEREBELLEUSE (Olivary-Ponto-Cerebellar Atrophy). J. DEJERINE ET A. THOMAS (*Nouvelle Iconographie de la Salpêtrière*, No. 4, July-August, 1900, p. 330).

The purpose of this paper is to attempt to classify the cerebellar atrophies which show certain clinical similarities. Such cases are found scattered through literature. The material of the paper is furnished by two cases, one of which came to autopsy. These cases permitted the study of the symptomatology accompanying cerebellar abscesses, their diagnosis, and some anatomical considerations of the cerebellum and the physiological pathology of the cerebellar syndrome. The two cases showed typical symptoms of cerebellar disease, disturbance of equilibrium in standing and in walking, but with almost absolute integrity in the isolated movements of an extremity, speech disturbances, nystagmus, exaggeration of reflexes, etc. Case I. died suddenly, and a careful microscopic examination of all parts of the central nervous system, illustrated in the article by excellent photographs, is given. The authors sum up their results as follows: The nervous system is in the main small. There exists an atrophy en masse of the cerebellar cortex, more marked in the hemispheres than in the worm, with degeneration and disappearance, in great part, of the afferent and efferent fibers and fibers of projection, with atrophy of the principal nuclei of origin of the efferent fibers, the bulbar olive and the pontine nuclei. Atrophy, less pronounced, of the nuclei of the central gray (dentate nucleus, roof nucleus and "Bouchon" round nucleus). It is a primary cellular atrophy, the absence of vascular alteration, the hemorrhagic foci, and foci of softening, of sclerosis permits this to be affirmed. The topographical anatomical lesions are, first, a total atrophy of the cerebellar cortex; second, total atrophy of the gray matter of the pons, and total degeneration of the middle cerebellar peduncle. Third, the very pronounced atrophy of the inferior olive of the ponto-olive nuclei, archiform nuclei, degeneration of external arcuate fibers and of the corpora restiformia. The pyramids and cerebral peduncles appear smaller than normal, but show no traces of degeneration.

The following classification is proposed. Cerebellar atrophies comprehend two classes, a sclerotic atrophy and a simple degenerative atrophy. The authors agree in general with the results obtained by experimental physiology. The cerebellum as a center of the reflex of equilibrium (Flourens Thomas) is especially favored by the disturbances in equilibrium, locomotion and the relative integrity of isolated

movements found in these cases. The asthenia, the rapid fatigue, the slight diminution of tone in certain muscles, more apparent than real, it is true, the oscillations of the body, are all favorable to the theory of Luciani, according to which the cerebellum, in the normal state, exercises upon the rest of the nervous system an influence which can be expressed by a neuro-muscular sthenic tone and static action, that is to say, a complex function by which the cerebellum augments the potential energy at the disposal of the neuromuscular apparatus (sthenic action). It increases the degree of their tension during functional pause (tonic action). It accelerates the rhythm of the elementary impulses during their functional activity and it assures the normal fusion and the regular continuity of acts. The physiological mechanism of the tremor, nystagmus, speech defect, cannot at present be explained. The following general conclusion is advanced by the authors at the end of their paper:

There exists a cerebellar affection characterized anatomically by the atrophy of the cortex of the bulbar olives, of the gray pontine substance, by the total degeneration of the middle cerebellar peduncles, by the partial degeneration of the restiform bodies, by the relative integrity of the central gray nuclei. It is an atrophy which is primary, degenerative and systematic, and not sclerotic nor inflammatory. It is clinically less well marked. It is manifested by the cerebellar syndrome common to all cerebellar atrophies. It is not hereditary nor familiar, nor congenital. It occurs at an adult age. Its etiology is obscure and it is included in the category of primary cellular atrophies. We designate it by the name of olivo-pontine-cerebellar atrophy.

SCHWAB.

UN CAS DE PARALYSIE BULBAIRE SUPÉRIEURE CHRONIQUE. (A Case of Bulbar Chronic Superior Paralysis.) CHARLES HUDOVERNIG (Nouvelle Iconographie de la Salpêtrière, 13th Year, No. 5. September-October, 1900. p. 473).

A case of bulbar paralysis of superior type, very chronic in its course, without any complications and absolutely unilateral. Such cases are extremely rare, no similar case having been observed in literature. The case is as follows: A woman, aged seventeen years, had always been well. No family history; no specific or alcoholic history. At the age of eleven years it was noticed that the left eye showed a deviation to the left, which slowly increased in degree, so that it became impossible to move it to the right. At the same time the left eyelid gradually fell, so that it became more and more impossible to open the left eye. For two years the eye had been completely closed and the globe turned outward. Outside of the paralysis referred to, no other condition in respect to the cranial nerves or to the internal organs was at that time found. It is then a question of a young girl seventeen years old, without hereditary or personal antecedents; she enjoyed the best of health until the actual beginning of the disease six years ago. This began with paralysis of the left oculomotor, with deviation of the eye externally. A ptosis developed. All the branches of the third pair gradually became affected. Thus at the end of six years a total ophthalmoplegia was present. In addition to the lesion of the third pair, there was a paresis of the left facial, involving all the muscles supplied by this nerve. There was no evidence of atrophy, or the reaction of degeneration in the region supplied by the nerve.

The following are important from the standpoint of differential

diagnosis: lesion in the orbit, aneurism of the carotid in the cavernous sinus, basal process, lesion of the cranial bones exercising pressure, peripheral affection, root lesion, cortical or supranuclear lesion. These were all easily excluded, chiefly on the ground of the definite anatomical distribution of the lesion, and the absence of involvement of other structures in the vicinity. The lesion in this case was, without doubt, a nuclear one, an isolated affection, limited to the nuclei of the nerves in question, that is the third and seventh, in other words, it is a chronic superior bulbar paralysis or chronic superior encephalitis. The peculiarities in the case to be especially noted are the unilateral symptoms and the long duration without complication. The possibility is granted that, if the process should extend to the bulb, its unilateral character would then disappear. SCHWAB.

ÉTAT APOPLECTIFORME, HÉMIPLÉGIE ET AMBLYOPIE ALTERNES, CHEZ UN HYSTÉRIQUE. GENÈSE ET RÔLE DE L'IDÉE FIXE. (Apoplectic form Attack, with Hemiplegia and Crossed Amblyopia in an Hysterical Person. Beginning and Role of the Fixed Idea.) SCHERB (Archives Provinciales de Médecine, I, No. 5, pp. 329-339).

Scherb reports a case which is interesting because the hemiplegia came on without known cause, and simulated organic hemiplegia so closely that a very careful examination was necessary to establish its hysterical character.

The patient was a carpenter, 49 years of age. He was received into the hospital with a diagnosis of cerebral apoplexy. He was semi-comatose and did not reply to any question. There was a right hemiplegia. During the first night the patient tried to raise himself in bed, but fell back, as the right side was helpless. There was no vomiting and no sphincter trouble. The next day the patient was in a profound stupor and did not reply to any questions, although he would open his mouth when requested, but without projecting the tongue. The hemiplegia seemed to involve the face, as the labial folds were plainly deviated to the left. The patient's temperature was 37.8°, and 38° at night. The tongue appeared to deviate in the mouth. It was not coated, nor was the patient's face flushed or his respiration stertorous. There was no conjugate deviation of the head and the eyes; he did not look to the left toward the supposed lesion. There was an active fluttering of the eyelids. Associated with this right hemiplegia was an absolutely profound hemianesthesia of the same side, but extending only up to the neck. The anesthesia was complete to touch, pain, heat and cold. The sole of the foot, however, was sensible, and the patient moved the toes slightly when they were pricked. But the toes responded by flexion when pricked, showing that Babinski's symptom was not present. On the left side of the body there was a very lively hyperesthesia, which extended to the face. One very curious symptom present was that when the left arm, the one not paralyzed, was raised from the bed by anyone, it had a tendency to remain in that position, only falling after some seconds, a condition suggesting catalepsy. The urinalysis showed no albumin or sugar.

On the second day after admission the patient answered questions by signs with his left arm, and also made known his wants in the same manner. It was learned that the present condition began with a sudden loss of vision in the left eye, so marked that the physician who saw him at that time thought it was due to an embolus of the

central artery of the retina. Then hemiplegia came on with the first appearance of the apoplectiform attack. On examining the left eye, the cornea and conjunctiva were found to be absolutely insensible. The eye reacted normally to light. The right knee-jerk was exaggerated, but not abrupt, while the left was normal. There were no reflexes present at the elbows or wrists. On the left side of the body some very distinct hysterogenic zones were found which provoked a state of spasm very intense. The temperature and pulse were now normal. The man now whispered some almost inarticulate words when questioned. The pharynx was found insensible on the left side, and there was also an anesthetic area around the blind eye. When the patient was lifted out of bed and forced to make an attempt at walking he presented a typical example of the gait Charcot has described under the name of *helcopodie*. The patient dragged his leg after him as if it were a strange body, of which he seemed to ignore the existence. He walked, hopping on his sound leg only, hardly resting the point of his paralyzed foot on the ground. At this time his wife said that 28 years prior to this attack the patient had received a bullet in the right side of the neck at the level of the ascending branch of the maxillary. This bullet escaped on the same side near the nose. It was thought to have cut some of the filaments of the inferior facial, and to have caused the paralysis of the right face. (This paralysis of the right face has persisted since the disappearance of the hemiplegia.) Since this injury the man has been taciturn, likes to be alone, talks very little, has no friends, and replies to his wife only in monosyllables. He has had rheumatic pains for some years, and lately they have been markedly severe in the right arm and leg.

Scherb discusses the various symptoms presented by the patient, and, giving his interpretation of each, concludes that the man was suffering from an hysterical hemiplegia affecting the right arm and leg, and that the deviation of the tongue to the left and the paresis of the right face were the results of the bullet wound received 28 years before.

The patient one night was given 5 centigrammes of methylene blue and told that if his urine was not blue the following morning he would be completely paralyzed. The next morning he got out of bed and walked. He showed the doctor his blue urine and smiled. The next morning the blindness in the left eye had disappeared, and also the anesthesia of the cornea and conjunctiva and the anesthetic area surrounding that eye. The aphonia persisted and he insisted by gestures that he could not talk, because of the bullet wound he had received. The writer concluded that the man had two fixed ideas: (1) That he could not talk because his tongue, he thought, was paralyzed, and (2) that he was not able to work because his right arm was useless, both of which ideas were groundless.

Scherb summarizes the symptoms establishing the diagnosis of hysteria as follows: (1) Right hemiplegia, with hemianesthesia arrested at the neck. No crossed amblyopia. The gait called *helcopodie* by Charcot. (2) Apoplectiform onset apparently, but with no rise of temperature, and no conjugate deviation. Fluttering of the eyelids, an important sign noticed by Charcot and Gilles de la Tourette as peculiar to hysterical apoplexy. (3) Aphonia, with anesthesia of the hyoid region. Whispering possible. (4) Left amaurosis, with a large periorbital area of anesthesia. (5) No sphincter trouble. No signs of organic contractures. Absence of Babinski's sign. (6) The disappearance of all symptoms except aphonia. (7) The mental condition of the patient.

BONAR.

LIN FALL VON ANGEBORENEM HIRNBRUCH (A Case of Congenital Hernia Cerebri). BEHM (Münchener med. Wochenschrift, 1900. No. 31, S. 1069).

An infant, one week old, presented in the region between the lesser fontanelle and the occipital protuberance a pediculated swelling about as big as a hen's egg, which was soft, did not pulsate, and was neither increased in size when the child cried, nor diminished on pressure. Reduction was attempted by the application of compression, but, as after four days' trial, the tumor seemed larger rather than smaller and threatened to burst through the skin, the thick pedicle was perforated and tied off in three portions. The child bore the operation well. In four weeks the wound was entirely healed, and six months later the patient had developed both mentally and physically in a normal manner. There was still a fluctuating swelling of about the size of a cherry upon the site of the former hernia. The tumor removed was cystic and contained a yellowish fluid. Its solid portion showed nerve cells and fibers, but in the pedicle no nervous elements were present. The cyst cavity was lined with ciliated epithelium. Hence the tumor was regarded as being a portion of a ventricle surrounded by brain substance, an encephalocystocele.

ALLEN.

THERAPY.

THYMUS EXTRACT IN VASOMOTOR AFFECTIONS. S. SOLIS COHEN (New York County Medical Society. May, 1900).

The author described a condition of vasomotor ataxia in which thymus medication is of very great benefit. Patients with this affection usually have deficient perspiration, which makes them extremely uncomfortable in summer, while in the winter they are liable to have cold extremities and a condition of overperspiration of the trunk. Sometimes a mixture of thyroid and thymus treatment improves the condition very much. At other times the use of a combination of thymus and suprarenal is more effective. In about one-half the cases of goiter the administration of thymus-gland substance will bring about some diminution in the size of the goiter. Where adenomata of the thyroid exist or where cysts have formed and fibrous degeneration asserted itself, thymus medication will do no good. It is much better than thyroid in the treatment of goiter. Investigations made so far seem to indicate that there is no iodine in the thymus. This is very interesting when we consider its therapeutic relation to goiter, since it has been assumed that it is the iodine elements in the thyroid substance which especially produce an effect upon goiter. Clinical observations seem to point to the fact that the use of thymus substance raises blood pressure. Physiological experts announce as the result of laboratory experience that blood pressure is lowered by it. It certainly has a marked influence on nutrition.

JELLIFFE.

THERAPY OF PITUITARY BODY EXTRACT. W. M. LESZINSKY (New York County Medical Society. May, 1900).

The author said that Marie first suggested the probable etiological significance of the pituitary body in acromegaly, hence the extract of this body has been used as a remedy. This is the only condition in which extract of pituitary body would seem to be indicated. The results so far obtained are very contradictory and certainly possess as yet very little, if any, scientific value. It is supposed that the secretion from the prehypophysis is carried through the nervous system and acts trophically. This, however, is mere theory, and is not

entirely substantiated by comparative anatomy. It has been plain that the administration of pituitary substance relieves the intense headache from which acromegals so often suffer, and that it lessens the paresthesia which occurs during the course of the disease. It does not, however, stop the progress of the disease. This is not surprising, as the diagnosis is never made till the disease is very much advanced.

Dr. Leszinsky has tried pituitary extract personally in two cases. In neither of them did it seem to accomplish any good. Harlow Brooks has put forward the theory that the secretion of the hypophysis acts as a stimulant to connective tissue and that this is the reason why it produces acromegaly. In that case its administration would rather be contraindicated in the disease. The gland has been extirpated in dogs without producing acromegaly. It has been known to be destroyed in man by neoplastic degeneration without producing acromegaly. Sarcoma of the hypophysis has been found in a number of cases in which there were no signs of enlargement of the extremities. There are really, therefore, no good grounds for the use of pituitary extract in disease.

JELLIFFE.

THYROID EXTRACT IN MENTAL AFFECTIONS. H. N. BIGGS (New York County Medical Society. May, 1900).

Dr. Biggs said that the development of thyroid therapeutics is a striking example of the value of the experimental method in medicine. It should be enough of itself, and without anything else, to convince the most radical and sincere antivivisectionists of the errors of their ways. The use of thyroid for cretinism is the most notable triumph of organotherapy. Notwithstanding the claims made in the matter, however, cretins never quite reach the ordinary intellectual standard. In the adult the administration of thyroid extract often does not produce much effect. In one case in Dr. Biggs' experience it did practically no good at all. Thyroid extract has been used in exophthalmic goiter, but instead of giving relief, it has practically always intensified the symptoms. In about two to three per cent. of the cases of exophthalmic goiter it effected a cure. But this does not modify the conclusion that thyroid extract is probably the toxic cause of the symptoms of exophthalmic goiter. Certain it is that healthy individuals who are given an excess of thyroid substance suffer from a set of symptoms that resemble very much those of Graves' disease, without the exophthalmus or the goiter.

Thyroid extract has been administered for mental diseases, and sometimes with a certain measure of success. The only affections in which its use seems justified are chronic mental troubles. Its use is dangerous in acute mania. Thyroid extract is also contraindicated wherever tuberculosis exists or wherever there has been recent loss in weight. Its use has been recommended in goiter. The active principle of thyroid extract is very probably an iodide, and certain derivatives of iodine are the best remedies that we have for goiter. In recent cases of goiter, especially in young subjects, thyroid extract often seems to do some good. In old cases where cystic degeneration has taken place and fibrous tissue been formed, thyroid extract does no good. It may also be added that treatment by iodine does no good either. In certain cases of obesity thyroid extract has been used to very decided advantage. It has very little effect upon the firm fat of large-framed people with an hereditary tendency to put on flesh after middle life. In individuals of an anemic character, who, despite their fatness are soft and flabby, especially women just after the menopause, the remedy is most effective for obesity. The effect

of the thyroid extract will be noticed very markedly during the first week of its administration. Patients have been known to lose as much as fifty pounds of flesh in six months without any serious disturbance of their general health, simply under the use of gradually increasing doses of thyroid extract. The use of thyroid extract in cretinism has suggested its use in the retarded development of children, even where there is no evidence of any deficiency of the thyroid. In some few cases favorable reports have been given, but as a rule the condition is not much modified unless there is an obvious etiological relation between it and the thyroid.

JELLIFFE.

PATHOLOGY.

UEBER EINIGE MAKROSKOPISCHE GEHIRNBEFUNDE BEI MÄNNLICHEN PARALYTIKERN (On Some Macroscopic Changes in the Brains of Male Paretics). NÄCKE (Allg. Zeitschrift für Psychiatrie, 1900, Bd. 57, S. 619).

The author has studied the gross pathological changes in the brains of 100 paretics, paying special attention to the condition of the skull, the membranes, the ependyma, the cortex and the arteries. In all of these, he finds the greatest variability as to the presence and extent of lesions, and thinks that the descriptions of the pathological anatomy of general paresis, which are found in the various text books, are entirely too didactic, and need to be modified. The following conclusions are drawn:

1. Since in the course of time the clinical picture of general paresis seems to have undergone a change, it is to be expected that its pathological anatomy should also change, and careful observation shows that it has in fact done so.

2. There is macroscopically no absolutely pathognomonic change in the brain of the paretic, and so far as our present methods go, there is none microscopically recognizable either.

3. By comparison, the clinical symptoms of paresis are found to vary in different institutions, dependent upon race, occupation and conditions of life. The anatomical findings correspondingly vary, as reported from different sources during the same period of time.

4. Comparing observations from different countries, this variation is even more marked.

5. Atheroma of the cerebral vessels, the heart and temporal arteries, is so irregular in its occurrence and location in general paresis that no direct connection between the two can be assumed.

6. That vascular disease in general paresis is syphilitic in origin is so far unproven.

7. More extended observations on the gross brain changes in paretics, especially in women, are needed.

8. To be of assured value, these observations should be made by pathologists of extended training and experience.

The article is carefully prepared, and commends itself to those interested in the subject. A number of references are given.

ALLEN.

L'ANATOMIE PATHOLOGIQUE ET DE L'HISTOPATHOLOGIE DE LA PARALYSIE-GÉNÉRALE. (The Pathologic Anatomy and the Histopathology of General Paralysis.) SERGE SOUKANHOFF and F. GEIER (Nouvelle Iconographie de la Salpêtrière, 13th Year, No. 5, September-October, 1900, p. 478).

This is a very suggestive piece of work on the study of the cen-

tral nervous system of two cases of general paralysis. The method used was that of Busch, which is essentially that of Marchi, with these advantages, as stated by the authors: First, the general surface of the preparation is much clearer, the black granules can be more easily seen and are more distinct. Second, the osmic acid preparation takes place more rapidly. The method briefly is this: Formol hardening, washing in water, sections placed in a solution—osmic acid, 1.0; iodide of sodium, 3.0; aq. destil, 300.0. The preparations are left in this solution for from four to fourteen days, they are then washed in water, imbedded in celloidin and cut. Other methods employed were toluidin blue, polychrome, methylene blue, thionine, Delafield, Apathy, Heidenhain, etc. The findings in the two cases are given in great detail. In this abstract only some of the general conclusions as derived by the authors from microscopic details will be given. The two cases showed a great resemblance in their anatomic appearances, but the severity of the pathologic findings correspond very well with the clinical differences in point of the severity of the motor involvement. The motor symptoms were much more pronounced in the first case, there being contractures in the lower extremities, rigidity in the hands, etc. Histopathologically the findings showed an interesting correspondence in comparison with the second case, in which the motor symptoms were much less pronounced. The secondary degeneration of the lateral pyramidal tracts was very pronounced, commencing in the left hemisphere and extending to the lower part of the left half of the cord. The vascular changes, pigmentary and fatty degeneration of the cortical cells and those of the cord, degeneration in the other systems, and in the conducting spinal paths, etc., were found. In the second case, the motor symptoms being less pronounced, the degeneration of the lateral tract on the right was less pronounced than in the first case. The degeneration on the left corresponded.

In both cases a very marked myeline degeneration at the periphery of the cord was observed, and more accentuated lesion of the radicular fibers and of the posterior root of the inferior than of the superior portions of the cord was noted. The last fact is difficult of explanation. It probably points to a general auto-intoxication or to an intoxication as is observed in polyneuritis. Since, in addition to the fact described before, the intramedullary part of the roots has been involved more by the lesion than the extramedullary part, it must be concluded that the meninges were involved in the lesion. The modifications in the intramedullary pressure of the cord produced circulatory changes in the lymph and was reflected upon the meningeal structures. In passing through the altered meninges, the root fibers would be exposed to a certain degree of pressure, which would prevent the regular transmission of trophic influences from the nervous centers, that is to say, from the spinal ganglia. It is for this reason that the intramedullary part of the posterior fibers is exposed more quickly to degeneration than the extramedullary portion, the latter being more favorably situated by means of their position for the trophic influences of the spinal ganglia. The modifications in the pyramidal tract are due to modifications in the cortical nerve cells. Their alteration probably bears some relation to the attacks of apoplexy observed so frequently in progressive paralysis, depending possibly upon a disturbed circulation or vascular change there. The profound modifications of the cortex of the frontal lobe have another pathogenesis, probably being due to a local inflammatory process.

SCHWAB.

Book Reviews.

DIE LITERATUR DER PSYCHIATRIE, NEUROLOGIE UND PSYCHOLOGIE, VON 1459-1799; MIT UNTERSTÜTZUNG DER K'GL. AKADEMIE DER WISSENSCHAFTEN ZU BERLIN. Herausgegeben von Dr. Heinrich Laehr, Professor und geh. Sanitätsrath. Vols. 2. Berlin. Verlag von Georg Reimer. 1900.

This is a monumental piece of work that only a German could conceive of and put through to a satisfactory ending. The entire piece of work occupies four separate brochures, in two volumes, with a separate index. The index alone is a book of 270 pages.

Volume one collects the literature from 1459 to 1699. There is here not only the names of the articles written by the early authors, but also, in many instances, a short description of what the work contains. There are 750 pages in this first volume. The second volume, in two halves, is of 1,130 pages, and considers the literature from 1699 to 1799. Thus the entire work is 1,880 pages in extent, cites 16,396 separate books, by 8,565 authors, with analyses of 2,778.

The extensiveness of the work can be appreciated only by taking the volumes in hand and looking over them.

Present day psychiatry will, perhaps, learn little from the works here cited. The present decade is too busy with its own little round of work, but for the antiquarian and the lover of historical medicine, Dr. Laehr has given a work of inestimable value. It is impossible to review such a work; suffice it to say, it will stand as a monument to the author's industry and a credit to his scholarship, and to the rare quality of historical justice.

JELLIFFE.

SURGICAL PATHOLOGY AND THERAPEUTICS. By John Collins Warren, M.D., LL.D., Professor of surgery in Harvard University; Surgeon to Massachusetts General Hospital. Illustrated. Second edition, with an appendix. W. B. Saunders, Philadelphia.

The flattering reception accorded the first edition of this work by the students of medicine and general practitioners throughout the country has been well merited by the author. No work on this subject has been better received by the profession, since Billroth's *Surgical Pathology* was first translated for the benefit of the American profession. It has admirably filled in the gap made vacant, bringing the bacteriology and pathology right up to date.

The author has a fascinating style of description, which holds the mind of the reader as effectually as a novel.

The only change noted in this second edition is the addition of the appendix devoted to the scientific aids to surgical diagnosis, viz., blood examinations, bacteriological examinations, spinal puncture, etc. The bacteriology of the skin is touched upon, and it is shown how difficult it is to avoid the presence of all pathogenic bacteria. The bacteriology of the nose, eye, ear and mouth is given, and the method of preparing these sites for operation carefully described. Serotherapy is mentioned, but the author is not very enthusiastic over the results so far obtained in surgical practice.

ADAMS.

ESSENTIALS OF SURGERY. Together with a full description of the Handkerchief and Roller Bandage, arranged in the form of Questions and Answers; prepared especially for students of medicine. By Edward Martin, A.M., M.D., Clinical Professor of Genito-Urinary Diseases in University of Pennsylvania. Illustrated. Seventh Edition, Revised and Enlarged, with an appendix containing full directions and prescriptions for the preparation of the various materials used in antiseptic surgery, also several hundred receipts covering the medical treatment of surgical affections. W. B. Saunders, publisher, Philadelphia.

The great value of the question compend lies in the fact that by making use of the questions and answers the essential points of the subject are brought out so that on this framework the student can build intelligently and to some purpose. Dr. Martin has succeeded admirably in bringing out the salient features of the theory and practice of general surgery, and with this as a foundation the student can more intelligently absorb the detailed information to be obtained from the general textbooks. This, the seventh edition, has been carefully revised by the author and numerous changes and additions have been made. The modern treatment of appendicitis has been entirely rewritten. This work does not deal particularly with regional or special surgery, but more with the principles of general surgery.

The chapter on bandaging is well illustrated, and the different methods of applying the roller and handkerchief bandage fully described. Mention is made of the Röntgen rays.

In the appendix we have several hundred receipts, designed to cover the medical treatment of surgical affections, and they have been prepared with great care and judgment.

The work is well up to the high standard of Saunders' Question Compend, which are held in such high esteem by the medical student of to-day.

ADAMS.

A TREATISE ON HUMAN ANATOMY IN ITS APPLICATION TO THE PRACTICE OF MEDICINE AND SURGERY. BY JOHN B. DEEVER, M.D. In Three Volumes. P. Blakiston's Son & Co., Philadelphia.

The first two volumes of this treatise are at hand, and too much cannot be said in praise of the form in which this work has been presented to the medical profession. The author has made no attempt to write a descriptive anatomy, but has given one that will appeal to the wants and needs of the physician and surgeon, especially to those in practice who have not the means of availing themselves of anatomical material as readily as the favored few in the medical colleges of our greater cities. Twelve years have been given to the preparation of this work, and Dr. Deever is to be congratulated that during the time spent he has been able to evolve a masterpiece that will perpetuate his name in the medical world for generations to come.

The arrangement of the subject matter is logical and scientific. Each part of the body is carefully described, and the surgical points of interest kept well in the foreground. These points are beautifully brought out by the plates descriptive, first, of the superficial sites and landmarks, and then by plates depicting the deeper tissues. The beauty of these illustrations can hardly be surpassed, and reflect great credit on the artists. All are full page, and, as the author states in his preface, "for the most part made from dissections, and are, therefore, original and accurate." At first glance one is amazed at the wealth of illustrations, and is apt to think they are the chief feature of the work, but on closer inspection the text is found to contain a full

description of the parts and of such surgical operations as ligation of arteries, amputations, nerve stretching, resection of joints, etc.

The work should find a place, not only in the hearts of the general practitioner and surgeon, but should also be prized by those following special lines, as the aurist, ophthalmologist, neurologist, and others. To the student, with these volumes before him, the study of anatomy, which is so often irksome to the beginner, will be made clear, easy and attractive. Vol. I deals with the upper extremity, back of neck, shoulder, trunk, cranium, scalp and face. Vol. II, with the neck, mouth, pharynx, larynx, nose, orbit, eyeball, organ of hearing, brain, female perineum and male perineum.

The volumes are royal octavo, containing more than 600 pages each. Vol. I containing 151 full-page plates, Vol. II containing 170.

ADAMS.

THE LAW IN ITS RELATIONS TO PHYSICIANS. BY ARTHUR N. TAYLOR, LL.B. D. Appleton & Co., New York.

The author does not intend that this volume should be taken as a work on medical jurisprudence, but as a guide to the medical man, in order that he may protect himself and have a clear conception of the legal status of his position, as circumstances may arise.

Different cases are cited which have been adjudicated, and the physician can, from the principles laid down, formulate a line of action for himself which may be the means of saving a subsequent lawsuit. The volume contains 534 pages, and is divided into nine chapters, which discuss the right to practice medicine and surgery, the contract of physician with patient, contract of patient with physician, rights and liabilities of third parties, right to compensation, recovery of compensation, civil malpractice, including general liability of physician to patient, criminal liability and privileged communications.

The above are the subjects which essentially concern the practising physician, and the author has stated the conditions very forcibly and concisely. Every physician should, unless conversant with the law, avail himself of the contents of this book, and he will find himself better prepared to meet the conditions and circumstances involving legal complications into which any of us are liable to find ourselves drawn.

ADAMS.

THE MENTAL AFFECTIONS OF CHILDREN, IDIOCY, IMBECILITY AND INSANITY. By William W. Ireland, M.D., Edin. Second Edition. P. Blakiston's Son & Co., Philadelphia. 1900.

We have had occasion to say in a review of the first edition of this book, that we considered it the best book on the subject. Thus far no adequate treatment of similar topics has appeared in English dress, and the book remains as a monograph, a classic. The present edition is even better than its predecessor, for the researches of later years have been incorporated. The many important observations which have been made of recent years on the minuter anatomical details of defective brains have been critically commented on, and judiciously used in the preparation of this new edition.

From the illustrative point of view, criticism may be justly made. In the present development of the half-tone there is no excuse for the retention of a number of the miserable wood-cuts which, it may be said, disfigure a book so excellent in other respects. Franz Nöth, from a beautiful (?) lithograph, p. 228, may be quoted as a special offender. From a publisher's point of view, even the half-tones used are not successes. It may be noted that the book is printed in Great Britain, but this does not excuse such inferior half-tone work.

JELLIFFE.

BOOKS RECEIVED.

- "Text-Book of Practical Medicine." By William Gilman Thompson. Philadelphia: Lea Bros. & Co.
- "Psychopathia Sexualis." By R. v. Krafft-Ebing. Chicago, Ill.: W. T. Keener & Co.
- "Diseases of the Nervous System." By H. Oppenheim. Philadelphia: J. B. Lippincott Co.
- "A Treatise on Diseases of the Nose and Throat." By Ernest L. Shurly. New York: D. Appleton & Co.
- "Students' Medical Dictionary." By George M. Gould. Philadelphia: P. Blakiston's Son & Co.
- "Studies in the Psychology of Sex." By Havelock Ellis. Philadelphia: F. A. Davis Co.
- "Transactions of the Congress of American Physicians and Surgeons."
- "Warner's New Therapeutic Reference Book."
- "Manual of the Diseases of the Eye." By Chas. H. May. New York: Wm. Wood & Co.
- "The Care of the Child in Health." By Nathan Oppenheim. New York: Macmillan Co.
- "Physician's Visiting List for 1901." Philadelphia: P. Blakiston's Son & Co.
- "Degeneration of the Neurone." By Frederick W. Mott. London: John Bale, Sons & Danielsson, Ltd.
- "Guy's Hospital Reports." Vol. LIV. London: J. & A. Churchill.
- "Aide-Memoire de Neurologie." By Paul Lefert. Paris.
- "Dos Paginas Psiquiatria Criminal."
- "Etude sur les Hematomyelies." By Dr. Jean Lepine. Paris.
- "Die Myasthenische Paralyse." By Prof. H. Oppenheim. Berlin: S. Karger.
- "Festschrift in Honor of Abraham Jacobi, M.D., LL.D."
- "Diagnostic et Traitement des Maladies Nerveuses." Paris: Par Joanny Roux, M.D.
- "Progressive Medicine." Vol. II, June, 1900. Volume III, September, 1900. Volume IV, December, 1900. Philadelphia: Lea Bros. & Co.
- "Manual of Therapeutics." Detroit: Parke, Davis & Co.
- "Experimental Study of Children." By Arthur MacDonald. Washington, D. C.: Bureau of Education.
- "Abnormal Man." By Arthur MacDonald. Washington, D. C.: Bureau of Education.
- "Education and Patho-Social Studies." Washington, D. C.: Bureau of Education.
- "Proceeding of the American Medico-Psychological Association." Vol. 7.
- "Sanity of Mind." By David F. Lincoln, M.D. New York: G. P. Putnam Sons.
- "Diseases of the Eye." By Chas. H. May, M.D. New York: Wm. Wood & Co.
- "Report of the Commissioner of Education." Vol. I. Washington, D. C.: Bureau of Education.
- "Panama and the Sierras." By Frank Lydston, M. D. Chicago, Ill.: Riverton Press.

Miscellany.

THE STATE HOSPITAL FOR THE INSANE, at Howard, R. I., is to have some new buildings.

THE NEW MALE WARD at the State Hospital for the Insane, at Anna, Ill., has been completed.

THE CENTRAL INDIANA HOSPITAL FOR THE INSANE, at Indianapolis, Ind., has 140 more inmates than in 1895.

AT THE ASYLUM FOR THE INSANE, at Concord, N. H., the new building for nurses is now in use.

DR. BERTHA L. HOSKINS' PRIVATE SANITARIUM, in Brookline, Mass., has been removed from 113 Harvard street to 97 Francis street.

DR. JAMES H. KELLOGG, of the Battle Creek Sanitarium, Michigan, was recently stabbed, but not seriously wounded, by an insane patient.

IT IS RUMORED that Dr. Frederick Peterson and Dr. A. E. MacDonald are candidates for the position of President of the New York State Lunacy Commission, recently made vacant by the dismissal of Dr. Paul M. Wise.

SUPERINTENDENT J. A. HOUSTON, of the Northampton, Mass., Lunatic Hospital, reports 833 patients treated during the year ending September 30, 1900.

THE WATERTOWN, ILL., ASYLUM FOR THE INSANE, at the close of its last quarter, had 612 patients. The average cost per capita was \$33.37.

THE STATE HOSPITAL FOR THE INSANE, at Waterbury, Vt., has asked for an appropriation of \$18,000 to enlarge its buildings, and the Retreat, at Brattleboro, has asked for \$2,000.

THE BROOKLYN NEUROLOGICAL SOCIETY, at its annual meeting, held December 27, 1900, elected Dr. W. H. Haynes, president, and Dr. B. Onuf, secretary, for the year 1901.

DR. ARCHIBALD CHURCH has recently been appointed Professor of Nervous and Mental Diseases in the Northwestern University, Chicago Medical College, being head of the neurological department of that school.

THE CENTRAL HOSPITAL FOR THE INSANE, Indiana, is to have a hospital for the incurable insane erected in its grounds. The contract has been awarded, the price being \$86,728.

THE BIBLIOGRAPHY OF AMERICAN NEUROLOGY AND PSYCHIATRY on advertising pages xviii and xx is worth saving as a help to your literary work. Look at it.

THE INMATES of the various state hospitals of New York, on October 1, 1900, numbered 22,088, an increase of 653 over the preceding year. The cost per capita was \$165.38.

DR. FLORENCE C. BAIER, formerly of Owatonna, Minn., has been recently added to the medical staff of the North Dakota Hospital for the Insane, at Jamestown, and has charge of the female wards.

ONE OF THE ITEMS of the loan bill, recently submitted to the mayor of Boston, and which he has approved, consists of an appropriation of \$75,000 for new buildings at the Boston Insane Hospital.

THE TRUSTEES of the State Hospital for the Insane, at Norristown, Pa., at a meeting on January 4, cast 21 ballots without result for a successor to Dr. Tabor, and adjourned until January 18. At this meeting Dr. Mary M. Wolfe was elected chief resident physician in the female department, to succeed Dr. Susan J. Tabor, Dr. Alice Bennett withdrawing her name as a candidate after several tie ballots.

THE TRUSTEES of the Indiana School for Feeble-Minded Youth, at Fort Wayne, will ask for an appropriation of \$164,500 with which to purchase additional land, erect new buildings, purchase furniture, etc.

DR. GEORGE W. FOSTER has resigned his position at the Elizabeth Hospital for the Insane, at Washington, D. C., to accept an appointment as superintendent of the Second Hospital for the Insane at Bangor, Me.

DR. J. ALLISON HODGES, for several years past Professor of Nervous Diseases in the University College of Medicine, Richmond, Va., has been elected to the presidency of the college, to succeed the late Dr. Hunter McGuire.

THE STATE HOSPITAL FOR THE INSANE, at Morristown, Pa., has 2,085 patients, of whom 1,009 are males and 1,076 females. Of these over 400 are compelled to sleep on cots in the corridors because of a lack of room.

THE EASTERN INDIANA HOSPITAL FOR THE INSANE, at Richmond, seeks from the Legislature an appropriation of \$301,000 for the next two years. Of this amount, it is proposed to spend \$62,000 in the erection of two cottages.

DURING THE PAST YEAR the farm connected with the Northampton, Mass., Lunatic Hospital has paid \$24 a year per patient above all expenses of operating the farm. This means a net profit of \$14,000 on the basis of the average number of patients.

DR. JOHN E. WEEKS has been appointed to the professorship of ophthalmology in the New York University and Bellevue Hospital Medical College, made vacant by the death of Dr. Henry D. Noyes. Dr. Weeks has been lecturing in the medical school for the last two years.

THE WESTBORO, MASS., INSANE HOSPITAL, in its sixteenth annual report, says that there were 343 patients admitted during the past year, and 672 remained at its close. The average weekly cost of boarding patients was \$3.75. Additional buildings are planned for the near future.

THE LA CROSSE COUNTY ASYLUM FOR THE INSANE, at West Salem, Wis., has been authorized to purchase an additional quarter section of land at a cost of \$9,300. This will give the asylum 420 acres of land, all in one tract.

THE MEDFORD, MASS., INSANE ASYLUM, in its fifth annual report, states that the number of its inmates exceeds 1,200, and asks for an appropriation of \$20,000 to help pay the expenses of the institution. It also states that a special appropriation of \$50,000 for a nurses' home will be needed.

THE BOARD OF MANAGERS of the State Hospital for the Insane, at Trenton, N. J., has sent its annual report to Governor Vorhees. Increased appropriations are asked for in order to better carry on the work of the institution. The hospital now contains 1,117 patients. Thirty have been discharged cured during the past year.

BISHOP COLEMAN, OF DELAWARE, known as the "Walking Bishop," said in a recent address that intoxication is growing among women at a faster rate than among men. Statistics show that intoxication among men has decreased during the last 50 years, while among women it is increasing alarmingly.

SIR LAUDER BRUNTON, Dr. Stevenson, Dr. Luff and others have been appointed by the Manchester Brewers' Association to inquire into the presence of arsenic in the beer of that city. In a preliminary report they find all materials free from arsenic except certain sugars obtained from a certain firm.

DR. FRANK P. NORBURY, for the past four years in charge of the medical department of Oak Lawn Sanatorium, Jacksonville, Ill., has resigned, and will soon open, under his own control and management, an institution, at Jacksonville, for the private care and treatment of nervous and mental diseases.

IN THE CENTRAL HOSPITAL FOR THE INSANE, of Virginia, there were 435 patients under treatment during the past year. Two-thirds of the 192 new admissions were discharged cured. The board of directors are to ask the Legislature for an appropriation with which to erect three new female wards.

THE NATIONAL ASSOCIATION FOR THE STUDY OF EPILEPSY has appointed a committee, consisting of Drs. Frank K. Hallock, Bridgeport; Max Mailhouse, New Haven, and Edwin A. Down, Hartford, to collect statistics relative to the disease and to assist in a movement to establish an asylum for epileptics in Connecticut.

THE STATE COMMISSION OF MINNESOTA, appointed to investigate and report on the condition of the state asylums and hospitals for the insane, indorse the plan now being carried out in the new institutions at Anoka and Hastings. Special mention is made of the benefits received by patients in the smaller institutions.

THE ALABAMA BRYCE INSANE HOSPITAL, at Tuscaloosa, Ala., is caring for 1,600 patients in room intended for not more than 1,000. There were 700 applications for admission during the past year, of which number 137 had to be refused. The superintendent, Dr. J. T. Searcy, has made an appeal for relief.

DR. CARLOS MACDONALD, the alienist expert, recently testified in the trial of young Burnz, whose defense was insanity from excessive cigarette smoking, that during the past 30 years he had examined 50,000 persons as to their sanity and that he had never known of a case of insanity brought on by cigarette smoking.

THE MARYLAND HOSPITAL FOR THE INSANE, at Spring Grove, Catonsville, in its one hundred and third annual report, states that 626 patients were received in the institution during the year, and that there were 510 inmates at its close. The erection of an industrial building for the female inmates is recommended by the superintendent.

THE MCLEAN ASYLUM FOR THE INSANE, at Waverly, Mass., has one patient, a woman, who pays \$125 per week and has been in the asylum for nearly 52 years. In this time, it is estimated, she has paid about \$143,000 for board alone. Another high-priced patient is Congressman Boutelle, of Maine, who pays \$60 per week.

THE NEW JERSEY TRAINING SCHOOL FOR FEEBLE-MINDED CHILDREN, at Vineland, N. J., is reported to have received a bequest of \$100,000 from Thomas H. Vinter, executor of the Maxham estate. This legacy will pay off all obligations and leave the institution with a cash balance of about \$60,000.

THE COMMISSIONERS of the Asylum for the Incurable Insane, at Bartonville, near Peoria, Ill., in their annual report recommend appropriations amounting to \$669,000 from the Legislature at its next session. Of this sum \$225,000 is wanted for the erection of ten more cottages, \$200,000 is to be used for completing the work already under way, and \$139,000 for other additions to the institution.

A WOMAN WITH MELANCHOLIA, following an attack of the grip, turned on three jets of gas in her home in Brooklyn and caused the death of herself and husband. The husband apparently had tried to turn off the gas, but was so affected by the gas that he failed in the attempt. Two dogs in the room were also affected by the gas, but recovered when taken into the fresh air.

THE FARM connected with the State Hospital for the Insane, at Fergus Falls, Minn., has produced during the past season 4,280 bushels of potatoes, 6,240 heads of cabbage, 2,877 bushels of mangel wurtzels, 200 bushels of beets, 1,340 bushels of oats, 1,230 bushels of corn, 720 bushels of wheat, 90 bushels of barley, 150 bushels of onions, 770 bushels of turnips, 300 tons of ensilage, and 250 tons of hay, besides other farm products.

THE STATE COMMISSION IN LUNACY reports a further reduction, during the last year, in the cost of maintaining the insane, in the face of a marked advance in the price of nearly every article entering into provisions and stores account. A marked reduction was effected in the wages and salaries of employees and officers. The average cost of maintaining the insane during the past year, including everything, was \$165, as against \$178.42 for the preceding year. Many buildings were erected during the past year for the accommodation of the insane.

WHEN DR. CHARLES H. ROBERTS, a wealthy retired dentist, 80 years old, living in the town of Oakes, near Poughkeepsie, N. Y., learned that his daughter had begun proceedings to have him declared incompetent, he visited his lawyer and made an arrangement for a consultation of physicians to determine his sanity. Superintendent Pilgrim, of the Hudson River State Hospital, and Drs. Tuthill, Wilson and Otis talked with Dr. Roberts for an hour and then told him, to his great satisfaction, that they would testify before the Sheriff's Jury, which is soon to try the case, that his mind was as sound as that of any man of 80 years in the world.

SNAKE HILL ASYLUM FOR THE INSANE's employees have received a circular letter from Director Michael B. Holmes, of the Hudson county, N. J., Board of Chosen Freeholders, expressing the hope that at all times they "will act with patience, forbearance and in a humane manner toward the afflicted men, women and children in their care." This is not because the Freeholders are aware of any brutality on the part of the employees in the asylum, but as a precautionary measure to warn them that violence or unnecessary physical force toward patients under their care is strictly forbidden. The recent disclosures of brutal treatment of the insane in Bellevue Hospital are said to have occasioned this warning.

TO AMEND NEW JERSEY'S LUNACY LAWS a conference was recently held at New Brunswick of delegates from the various county medical societies. A number of recommendations, which will be submitted to the Legislature, were adopted. Many prominent physicians of the state were present, and every clause of the lunacy law was thoroughly considered in the four hours' discussion.

DR. GEORGE TAYLOR STEWART, who has recently been made superintendent of Bellevue, Fordham, Gouverneur and Harlem Hospitals, was born in New Milford, Conn., in 1855, and after graduating at Trinity College, Hartford, Conn., he got his medical degree at the Hahnemann Medical College in Philadelphia in 1882, after one year's study. He was connected with Ward's Island Hospital for a time, later he studied abroad, and then engaged in private practice in Mexico and California, returning to New York city in 1890. He has been at the Metropolitan Hospital, Blackwell's Island, since 1894, and has the reputation of being a strict disciplinarian. A year ago he reprimanded an interne at the Metropolitan Hospital, and, his associates siding with the interne reprimanded, he suspended the entire house staff, consisting of twelve internes, who were subsequently discharged by the Commissioner of Charities. The appointment of Dr. Stewart was first submitted to the Medical Board of Bellevue and approved of by them.

THE INVESTIGATION AT BELLEVUE HOSPITAL is still going on. Dr. George T. Stewart, the new superintendent, has dismissed a number of attendants for intoxication and for absence from duty without leave. Dr. Allan McLane Hamilton has called Commissioner Keller's attention to further abuses which have existed in the Insane Pavilion. Dr. Allen Fitch, one of the examiners in lunacy in the Insane Pavilion, has admitted the truth of the charge made by Dr. Hamilton that a fee of \$50 was collected for the examination of Miss Wendell in the pavilion. The three nurses, arrested in connection with the death of Louis H. Hilliard in the Insane Pavilion, have been indicted by the Grand Jury for manslaughter in the first degree, charged with having beaten Hilliard to death. Dr. John W. Moore, the physician who was in charge of the Insane Pavilion when Hilliard was killed, has been suspended by Commissioner Keller on the charge of neglect of duty. There has been some friction between the Medical Board of Bellevue and Commissioner Keller on the subject of Dr. Moore's suspension, the board having refused to approve the charges made by Commissioner Keller against Dr. Moore. The latest development of the case is the announcement that Dr. Moore has been reinstated to the position he formerly held. This is apparently a victory for the Medical Board. George Blair, superintendent of the Out-door Poor, may be displaced, as Commissioner Keller is convinced that he has been guilty of errors of judgment and of lack of method in handling the funds of the Out-door Poor Department. As a result of the charges of brutality made against the pupil nurses of the Mills Training School, over one-half the students in the school have been dismissed, have resigned, or are about to leave. This will so cripple the school that it may have to be abandoned. The Grand Jury are investigating the conditions existing in Bellevue Hospital, and particularly in the Insane Pavilion.

DR. ALLAN BLAIR BONAR, 146 West Ninety-fourth street, New York city, has consented to take charge of this department, and will be glad to receive any items of interest to our readers.

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TABLE OF CONTENTS ON PAGES II. AND IV.

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THE
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Original Articles.

THE AMELIORATION OF PARALYSIS AGITANS AND OTHER
FORMS OF TREMOR BY SYSTEMATIC EXERCISES.*

By JOHN MADISON TAYLOR, A.M., M.D.

Paralysis agitans is a disorder whose nature is far from clearly understood, and as yet no means have been recognized by which its discomforts and disabilities have been materially limited.

The pathology of paralysis agitans, as summed up by Gordinier, points toward changes resembling those found in senility, yet differs from them in their degree of intensity, and their steady, unflinching progression, producing a clinical picture as distinct and characteristic as that of a severe organic disease. There is a uniformity and constancy in the anatomic findings. The blood vessels are involved, exhibiting a proliferation of the nuclei, and thickening of the walls, forming by confluence patches or areas of perivascular sclerosis. The spinal cord was found in all cases to be the part most affected, and in certain ones it was the only part of the cerebro-spinal axis exhibiting changes.

There are, then, three characteristic changes found: (1) perivascular sclerosis with a predilection for the dorsal parts of the lateral and posterior columns; (2) degenerative changes of the multipolar nerve cells, and (3) a general hyperemia,

* Read by title at the meeting of the American Neurological Association in May, 1900.

as evidenced by the multiplication, thickening and local dilatation of the blood vessels, together with cellular infiltration. The two characteristic symptoms, the tremor and the rigidity, may be held to be due to one and the same cause, viz., an irritation from the presence of an increased amount of neuroglia in the posterior columns, causing an excitability of the reflex collaterals of the posterior nerve roots extending round the ventral corneal cells, and resulting in an increase of the normal rhythmic discharge of energy, producing first the tremor and next rigidity.

Having myself had rather satisfactory success in treating some forms of tremor as found in middle-aged folk, the nature of which was not always clear, I endeavored, with the assistance of Mr. Edwin Checkley, a teacher of physical culture, to do what I could to relieve several gentlemen of disabling forms of tremor, who had been under my observation for many years, and who had received various unavailing forms of treatment at diverse hands. It is difficult to more than allude to most of these, occurring, as they did, in private practice. Those seen in hospital work would not subject themselves to the tedium and expense (of time, etc.) necessary to bring about results.

It is a matter of observation on the part of Mr. Checkley and myself that, whenever a condition of tremor, senile or other, was found to be present in those who came under our observation, this condition was conspicuously relieved by certain regulated movements and forms of exercise which were specially devised to bring about a greater degree of elasticity of the tissues. Good co-ordination is essentially conditioned on this quality. In some instances there would be found a marked lack of muscular tone, in some others, however, there was no defect in muscular power. One hospital patient, suffering from paralysis agitans, was a blacksmith in active employment. One gentleman, an artist of distinction, showed a most distressing form of tremor which had induced great anxiety. There was in him not only no lack of muscular vigor, but, if anything, it was my opinion that he exercised far too much in such a way as amused him, or as

he felt impelled to take, but which, instead of relieving, rather exaggerated his distress. In all such cases there was found, to a greater or less degree, a feature which was exaggerated in the case of Mr. Mangold, to be related at length, namely, a tendency to contracture of certain of the tissues, usually more marked in the skeletal muscles, and especially conspicuous in those of the back of the neck, about the shoulder blade, the lower lumbar regions, the hips, and, in short, those areas least used by a person living a life of ease, or sedentary in character. Not only were the contractures noticeable in the tendinous insertions, and for a certain distance beyond them into the long muscles, but they were very conspicuous in the tissues lying immediately subjacent to the skin; so much so that certain portions of the surface conveyed to the hand touching them the impression of great density. Along with this was found, and especially in the parts described, marked changes in the character of the skin, which had lost its elasticity, and could not be separated from the tissues below, as can be done in health. The surface of the skin was, as a rule, also lacking in other normal qualities, showing a tendency to branny desquamation, lack of secretory action, and other evidences of impaired functional activity. In other parts of the body, especially those used more constantly, such as the hands and forearms, these conditions were less conspicuous, and sometimes not observed at all.

In testing these people we found that whereas there might be abundant strength in the flexor movements, their powers for extension were extraordinarily curtailed. This point, the lack of control over the extensors, seemed to us of great importance, and it became our special endeavor to overcome this difficulty, and from it we hoped, and found it true beyond our expectations, that the greatest amount of relief would come. Again, in those persons where this lack of extensor capacity was most evident, as in the cases of paralysis agitans, at first and for some days and weeks there was an absence of the normal subjective sensory appreciations. Ordinarily, in extreme extensions, both active on the part of the individual, and passive when we endeavor to forcibly overcome con-

tractures, there was less discomfort and pain than might be expected. This was true of the ligaments and tissues in and about the joints, but even more so of the subdermal tissues. As the exercises progressed, it was common to find gradually, or sometimes rapidly, increasing sensitiveness. Again, active extensions in perfectly normal directions became at times most painful, until a certain quality of elasticity was obtained, and then this subsided. This sensitiveness became in time an index very useful to us, by which we could determine the degree of progress, and by which we regulated the amount or quality of the movements.

In most of these cases two faults of attitude were always in evidence. I do not remember to have seen an individual who presented marked evidences of tremor, who could be said to hold himself well, or who possessed what may be called a "good carriage." There is nearly always an exaggerated stoop, involving pretty much the whole body; also there was evidence of slight contracture in most of the flexures in excess of that present in normal persons. To be sure, it is only too common to find ungraceful attitudes in people of early middle age, as well as in those of more advanced years. This may be the result of habit or carelessness, but wherever tremor is found to exist this contracted attitude is more in evidence, and in the overcoming of it the greatest relief of the tremor immediately followed.

The patient who most conspicuously illustrates the value of these exercises is Mr. G. A. Mangold, a druggist, of Pt. Pleasant, N. J., whom I have known since 1884. He is 52 years old, and of excellent general health, free from any disease, taint or heredity. The causal factors in producing Parkinson's disease in his instance were family and financial worries, beginning in the eighties, followed by close attention to business without allowing himself any relaxation whatever, night or day, for years. He enjoyed the conviction that his vigor and temperance would fit him to endure any strain.

The disorder began in 1892 by pain in the left wrist, which continued for several months, when the left thumb began to twitch, and the usual phenomena of paralysis agitans rap-

idly developed, and were witnessed by Dr. Katzenbach and Dr. W. H. Thomson, of New York. He consulted several physicians of great prominence, one of whom called the disorder "disseminated sclerosis," and used various remedial measures, none of which gave the least relief; and, pharmacist as he was, he became an extreme therapeutic nihilist. I saw the patient occasionally, and, as long ago as five years, remember clearly that he was so disabled as to be unable to feed himself or to speak. The only voluntary motion well preserved, even at that time, was the characteristic festinating walk or trot. Having noted the excellent result of exercises only upon three patients whose conditions were similar, I invited Mr. Mangold to come to the Howard Hospital and undergo treatment at the hands of Mr. Checkley and myself. His condition on entering was most deplorable as to his motor disabilities, but his general health had suffered marvelously little. The points of interest were the curious rigidity of the muscles of the trunk and limbs, pronounced contractures, especially in the tissues of the trunk and neck, the exaggerated cervical and dorsal curves, which could not be overcome by the utmost force we dared to exert. There was also great density of the skin and subcutaneous structures, and marked loss of sensitiveness, not only of the skin, but of the deeper tissues. The color of the skin was not bad; the eyes were clear; the organic activities in an excellent state; the muscles of good size, and, with such restricted movements as he could make, little impaired in strength. The range of movements of the upper limbs was confined to a half-arm reach up to the level of the eyes, and down to the knees. The legs were capable of moderate movements in walking or trotting; the knees were contracted to form an exaggeration of the usual pictures of the disorder, and could only be held apart, voluntarily, about three inches, and could only be separated forcibly by myself six or eight inches. The face exhibited a curious vacuous expression, eyes protruding, jaws almost immobile, as were also the tissues about the neck. The power of articulate speech was gone; the sounds uttered were hoarse mumblings, which his wife could interpret only with much conjecturing.

In short, the helplessness of his condition was most pitiable, and all this, bear in mind, occurring in one who was well-known to possess sound organs, of the most untiring energy in his work, and of excellent judgment in most matters.

Treatment by exercises and regulated movements was instituted and carried on for six months. No medicines whatever were used. The form of exercise was at first passive movements, massage to the skin and subcutaneous tissues, with oil inunctions. Next passive movements were applied to the limbs, back, neck and jaws, for the overcoming of the contractures. Next, extension movements were used, according to a very original method of Mr. Checkley, and devised with much wisdom to accomplish results in a progressive fashion, and not to overstrain, as is too often done, and as my experience has occasionally had bitter evidence. Much of the system involved posturings, stoopings, stretchings and deep breathings (the chest walls were almost rigid). He was made to kneel on all fours and extend the legs up to and beyond the hands, alternately and increasingly, inch by inch; to bend the body through the hips; to bend the neck forward on the chest (a most troublesome feat); to free the stiffened arm and shoulder muscles, and finally a simple form of apparatus was devised to compel normal movements to reach their fullest natural limits.

It would seem to me a detailed account of some of these measures might prove valuable, but possibly inadmissible in so limited a sketch.

As the tissues became more elastic, sensation returned, and there was for a time hyperesthesia to a painful degree. The sensations were at first tinglings and burnings, and often like that of pressure on the great nerves, as though the parts "went to sleep," and it was necessary to use deep massage to overcome the agony thus caused. This was not present wherever there was little or no contracture.

At such points as exhibited a condition of partial ankylosis, as in the tissues about the cervical and upper dorsal vertebræ, as well as the elbow joints and knees, the sensation was localized in the opposing surfaces, apparently in the per-

iosteum. Later this tingling extended to the near-by tissues, especially along the course of the tendons, and became that of a burning sensation, similar to the feeling produced in a sprained ankle or wrist. A severe frontal headache was usually present during, and for a time after, exercises. This, after some weeks, gave place to a pleasurable sensation, accompanied by a feeling of dizziness. Later there came a glow of satisfaction during and after the movements.

The employment of suspensions, as applied to tabes, is a step in the right direction, but it is at fault in so far as it is not supplemented by normal movements and extensions. When Fraenkel applied these, good results followed at once, and were of a permanent nature. In tabes the analogy is not close, no contractures therein co-existing.

It may be interesting to describe the present condition of the gentleman, about a year after beginning treatment.

He writes me, in a very legible hand, that he is not able to resume his occupation as a pharmacist, but can do all the lighter forms of work about a country house, where he keeps himself as busy as possible, under my advice. He speaks clearly. He has much passive tremor, but there is less on effort.

I am warranted in expressing the hope that this condition will yet improve, provided he is faithful in pursuing systematic movements, along with such free exercises as he may find wholesome or amusing. Regularity must be maintained to attain any permanent relief.

In conclusion, I feel myself warranted in expressing the conviction that in most forms of tremor, whatsoever their cause, we may hope to obtain fair amelioration of symptoms, and it may be, in some instances, a cure, by carefully regulated and systematized movements. These should be such as shall re-establish the largest degree of elasticity in the tissues which have suffered contractures. They should always include passive extensions and flexions, followed by active repetitions of these acts. The most important movements to overcome the milder forms of tremor, as the senile form, are slow, full, forcible extensions. An important part of the treatment is the attainment of normal attitudes. Along with this should be continued conscientious efforts on the part of the patient to acquire full thoracic capacity, and as much elasticity of the lungs as possible. To regain and maintain health and activity in chronic conditions of almost any sort, is conditional upon a fair respiratory capacity constantly exercised.

A CASE WITH THE SYMPTOMS OF CEREBRO-SPINAL
MENINGITIS, WITH INTENSE AND GENERAL AL-
TERATION OF THE NERVE CELL-BODIES,
BUT WITH LITTLE EVIDENCE OF
INFLAMMATION.¹

BY WILLIAM G. SPILLER, M.D.,

PROFESSOR OF DISEASES OF THE NERVOUS SYSTEM IN THE PHILADELPHIA
POLYCLINIC; ASSOCIATE IN THE WM. PEPPER CLINICAL LABORA-
TORY; PATHOLOGIST TO THE PENNA. TRAINING SCHOOL
FOR FEEBLE-MINDED CHILDREN.

The following case is interesting because symptoms of
• meningitis existed for six days and yet lesions sufficient to
explain these symptoms were not found at the necropsy. The
intense and general alteration of the nerve cell-bodies suggests
some remarks relative to the similar lesions observed in
amaurotic family idiocy.

According to the records in the case-books of the Pennsyl-
vania Training School for Feeble-Minded Children, F. S. M.
was born July 11, 1892, and was admitted to the Training
School, March 19, 1900. The parents of the child are living and
in good health. The father, a teamster, was thirty-two years of
age, and the mother twenty-six at the birth of this their fifth
child. There is no history of intemperance in parents or
grandparents. F. was born at full term, but in difficult labor,
lasting three days. One brother and one sister of the boy are
living, and are healthy, mentally and physically. F. was of
feeble mental development; he did not know the alphabet,
did not talk and could not dress himself properly. His sight
and hearing were good. His gait was spastic. He was of
small size, and had scoliosis. Sensation was normal so far as
could be determined. He did not have convulsions.

The following notes were made by Dr. W. G. Shallcross,
the resident physician:

"April 1, 1900. I was called early this morning to see F.
and found him in considerable pain, which he could not locate.
The skin was hot and dry, pulse was rapid and he had diarrhea
and vomiting. In the afternoon he was not so restless. The
bowels had moved once. The heart's action was rapid and the
second sound was accentuated, but there was no murmur.

¹From the Wm. Pepper Clinical Laboratory, Phoebe A. Hearst
Foundation.

Read before the Philadelphia Neurological Society, November 26,
1900.

The condition of the lungs was normal. The liver and spleen were not enlarged. Urine was passed involuntarily.

"April 2. F. was not so well to-day. He was more restless, but it was impossible to determine the location of the pain. The abdominal muscles were rigid, but showed no tenderness on pressure. He retained food.

"April 3. He was very restless and the skin was hypersensitive. The pupils were equal and seemed to react sluggishly. He had some photophobia. The abdominal muscles were rigid and the legs were drawn up on the abdomen as if the boy were in pain.

"April 4. Photophobia was quite pronounced. The pupils were about 3 mm., equal, and did not react to light. The neck was somewhat rigid and the head was retracted slightly. The muscles of all the extremities were stiff and the hands were thrown about wildly when the patient was disturbed. Hyperesthesia was very pronounced. The thighs were frequently flexed upon the abdomen.

"April 5. F. had a very restless night and was delirious at times. An erythema was noticed this morning about the right knee and calf. No albumin was found in the urine.

"April 6. Coma is developing and the patient is more quiet. The rash is spreading. He could not take food and was nourished by the rectum. Death occurred at 9.30 P. M."

A diagnosis of cerebro-spinal meningitis was made by Dr. Shallcross.

The necropsical notes are as follows: Cadaveric rigidity was present. Numerous small, dark-reddish spots of various sizes and shapes were seen on the anterior surfaces of the thighs, on the outer and inner parts of the legs below the knees, and on the anterior surfaces of the upper limbs.

Brain: The scalp was very adhesive to the skull. The cerebral dura was adherent to the calvarium at the coronal and sagittal sutures. A large amount of cerebro-spinal fluid tinged with blood escaped when the calvarium was removed. The brain was edematous. The superior longitudinal sinus contained a few soft clots. The dura was slightly adherent to the pia in small areas at the anterior part of the right frontal lobe and at the right temporal convolutions. No distinct evidences of inflammation could be detected with the naked eye. The pia about the optic chiasm and covering the interpeduncular space was somewhat opaque in patches, but hardly more than is seen in many normal brains. No miliary tubercles could be found.

Heart was small, normal in position, and the pericardial fluid was not excessive. Right auricle and pulmonary artery

contained chicken-fat clots. Tricuspid valve admitted two fingers and was normal. Mitral valve admitted the middle finger easily. Left auricle did not contain any clot. A chicken-fat clot was found in the right ventricle. The mitral and aortic valves appeared to be thickened. The cardiac muscle was a little pale.

Lungs: Right lung was somewhat edematous, but crepitated, and did not contain any areas of consolidation. The left lung was in the same condition as the right. There were no pleural adhesions on the left side, but some old adhesions were found on the right side. The diaphragm extended to the fourth rib on each side.

Liver was of good size and smooth, and extended to the border of the last rib. Reddish spots were seen on the upper surface, especially on the left lobe. The tissue was somewhat yellow on section and numerous small reddish areas like hemorrhages were found. The gall bladder was full.

Spleen was of normal size and of dark slate color. A small supernumerary spleen was found.

Pancreas appeared to be normal.

Suprarenals appeared to be normal.

L. Kidney: Capsule stripped easily and the surface of the kidney was smooth. No cysts were found. The tissue was pale on section; the cortex was somewhat yellowish. The pyramids were fairly distinct. The right kidney was in the same condition as the left.

Stomach was congested and small hemorrhages were found on its inner surface.

Bladder was normal and filled with urine.

Weight of brain, 1,040 grm.; heart, 80 grm.; left lung, 165 grm.; right lung, 175 grm.; left kidney, 75 grm.; right kidney, 65 grm.; liver, 810 grm.; spleen, 90 grm.

It is not surprising that this case was diagnosticated as one of cerebro-spinal meningitis, on account of the acute onset of the disease with fever of 102 degrees F., diarrhea and vomiting; the pain, the rigidity of the abdominal muscles, the hyperesthesia of the skin, the photophobia, the stiffness of the neck, etc. The microscopical examination of the nervous tissues, however, showed little evidence of inflammation. The nerve cell-bodies throughout the central nervous system were greatly altered and this alteration was not confined to the cells with motor function. It was seen in the cell-bodies of the posterior and anterior horns of the spinal cord, in the

nuclei of the cranial nerves, in the sensory, as well as the motor, nucleus of the fifth nerve; in the cells of Purkinje and in the parietal lobule, where especially the cells of Betz were altered. The cell-body was swollen and rounded; many of the dendritic processes had disappeared; the chromophilic

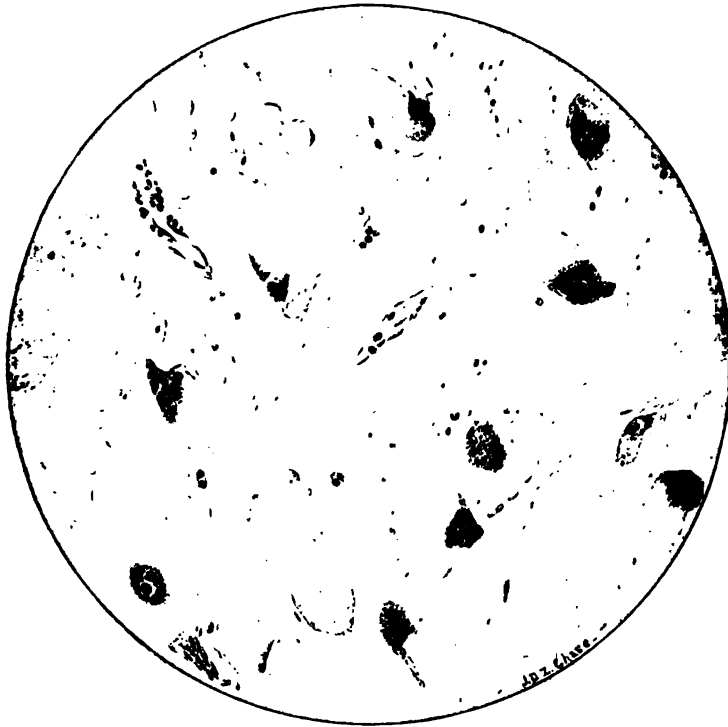


Fig. 1. Cell-bodies of the anterior horns in the lumbar region. They are represented as they appear in *one* field of the microscope, in order to show the intense alteration of all the cell-bodies.

elements were not to be seen, except in one portion of the cell-body, where they surrounded the nucleus, and even here were more or less disintegrated, and the nucleus had moved to the periphery of the cell-body. This description applies to most of the nerve cell-bodies of the central nervous system. The appearance presented by the cell-bodies of the anterior horns

was most extraordinary, as all the cell-bodies had undergone this peculiar alteration (Figs. I. and II.).

The lesions of meningitis were not found. A very slight round-cell infiltration was observed in some parts of the pia (Fig. III.) and about some of the intramedullary blood vessels, but the small vessels of the pia and anterior and posterior



Fig. II. Selected cell-bodies from the anterior horns of the lumbar region, with the exception of cell-body E, which is from the paracentral lobule. Cell-body A shows complete chromatolysis. The cell-bodies B and C are divided into several parts. In D, E and F the chromophilic elements are seen in only one part of the cell-body, and the nucleus is not distinct.

roots were much distended with blood. Numerous small bacilli were found within the nervous tissues.

In a case of amaurotic family idiocy Hirsch² observed a very extraordinary change in the nerve cell-bodies of the

central nervous system. All the cell-bodies of the anterior and posterior horns were greatly enlarged and round. The nucleus was at the periphery of the cell-body and was sharply defined, and contained a nucleolus staining deeply. The nucleus was surrounded by a dark zone gradually shading off into a more or less colorless area. The dark zone

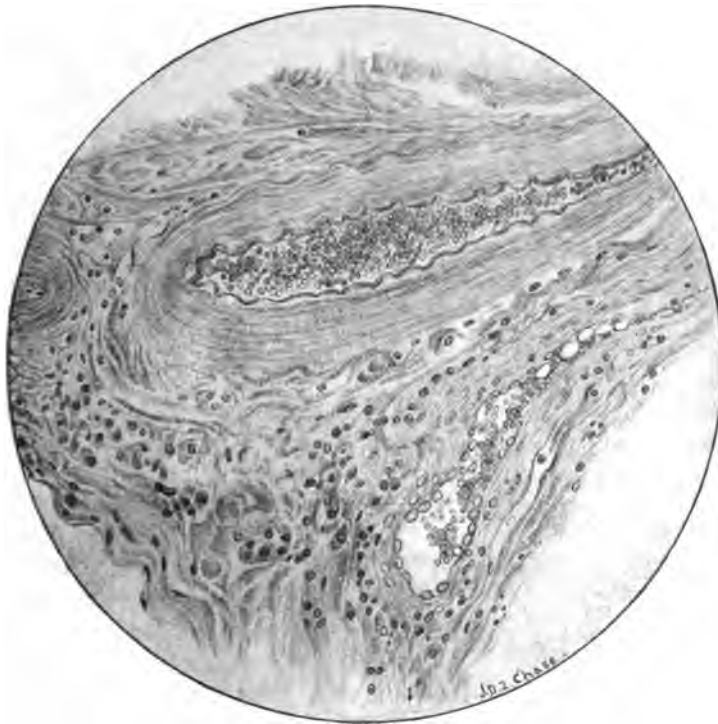


Fig. III. The pia of the anterior fissure of the spinal cord, showing a slight round-cell infiltration. Nowhere is the cellular infiltration more intense than that represented in the drawing.

contained broken-down chromophilic elements and occasionally a few normal ones. The light area of the cell-body was made up of a very fine network. Some of the cell-bodies were vacuolated. The dendrites and axone of the cell were very few, and many of the processes seemed to be broken off. The pictures of these cell-bodies represent them as swollen,

almost round masses. The same alteration was found in all the cell-bodies of the central nervous system, although the cell-bodies of the cerebellum were not much affected. Hirsch found degeneration of the pyramidal tracts. When he examined some of the preparations from a case of amaurotic family idiocy reported previously by Sachs, he found in these a similar change of the nerve cell-bodies, although the material had been hardened in Müller's fluid. Hirsch refers to no cases that were not of amaurotic family idiocy, in which a similar change of all the nerve cell-bodies was found, and he states that no disease is known in which simultaneously all the nerve cell-bodies of the entire nervous system become affected. The condition of the nerve cell-bodies in his case, he thought, corresponded in every respect to that found after experimental poisoning, and amaurotic family idiocy is therefore an acquired disease and is produced by some poison, possibly by a toxic condition of the mother's milk.

Sachs² argued in the discussion of this paper that a disease so widespread as amaurotic family idiocy, which begins always at the same period of life, and attacks several members of the same family and leaves others exempt, could not be due to any toxic influence that is known to us. From this we may conclude that Sachs either did not regard the alteration of the nerve cell-bodies as of toxic origin, or else he thought that this cellular degeneration did not explain the disease. Hirsch, in closing the discussion on amaurotic family idiocy, remarked that the toxic origin of the disease was an open question. He knew of no other inherited family affection where all the nerve cell-bodies, and nothing but the nerve cell-bodies, became diseased, and the condition, so far as he knew, had no analogy in pathology.

I have seen this same general alteration of the nerve cell-bodies of the central nervous system in two cases, and neither was a case of amaurotic family idiocy. One was a case of internal hemorrhagic pachymeningitis in an idiotic child aged nine years, and the microscopical report was published by me³

³Hirsch, Sachs. *THE JOURNAL OF NERVOUS AND MENTAL DISEASE*, 1898, No. 7, pp. 538, 555.

²Spiller and McCarthy. *THE JOURNAL OF NERVOUS AND MENTAL DISEASE*, 1899, No. 11, p. 677.

in collaboration with Dr. D. J. McCarthy. Even by the carmine stain the alteration of the cell-bodies in preparations hardened in Müller's fluid was most striking. The pyramidal tracts were not degenerated, which is interesting in view of the intense alteration of the motor cell-bodies. In Hirsch's case these tracts were degenerated.

The second case in which I have observed this intense and general alteration of the nerve cell-bodies of the central nervous system is the one with symptoms of cerebro-spinal meningitis reported in this paper. It is noteworthy that the cellular alteration in these two cases was in children of feeble mental development, as in the cases of amaurotic family idiocy, and such cellular alteration is therefore not confined to amaurotic family idiocy.

A theory of a toxic condition in the second case could be well supported by the clinical history, but not so well in the case of internal hemorrhagic pachymeningitis, although even in this it could not be absolutely rejected. The alteration of the nerve cell-bodies throughout the central nervous system is extraordinary, and yet in the two cases in which I have observed it secondary degeneration has not occurred. I am not aware that such an intense and widespread alteration of the cell-bodies of the central nervous system has been observed by other investigators in cases of disease of the human nervous system.

The symptoms of cerebro-spinal meningitis sometimes occur in typhoid fever and other infectious diseases without alteration of the meninges, and to this form of pseudo-meningitis the name of *meningisme* has been given by Dupré, and Schultze has spoken of "meningitis without meningitis." It is not impossible that in some of these cases an alteration of the nerve cell-bodies similar to that in my case occurs. A paper bearing on this subject has recently been published by Finkelstein.⁴ He says a few cases of longer or shorter duration have been observed in which the symptoms were indicative of meningitis and were fever, convulsions, rigidity of the

⁴Finkelstein. *Monatsschrift für Psychiatrie und Neurologie*, Vol. 8, No. 4.

neck, hyperesthesia and opisthotonos, and yet at the necropsy only slight edema and softening of the brain and a small excess of ventricular cerebro-spinal fluid were found. He did not regard this condition as a true meningitis serosa, but as inflammatory cerebral edema, because cellular infiltration of the meninges has been observed in a few cases.

Finkelstein shares the opinion of Seitz that some toxic substance in the cerebro-spinal fluid is the cause of this slight inflammatory edema, and that pathogenic bacteria in the cerebro-spinal fluid may cause severe cerebral symptoms without causing a distinct meningitis. He points out that in some cases meningitis serosa has been found to be due to the presence of bacteria. It seems that meningitis serosa cannot be sharply distinguished from the inflammatory cerebral edema.

It is important to remember that pronounced symptoms of meningitis may be present with very slight alteration of the meninges, and that even purulent meningitis may exist without any symptoms. In my case the brain was edematous, and on microscopical examination, very slight cellular infiltration could be found in the pia, so slight as to be questionable, but the nerve cell-bodies throughout the central nervous system were intensely altered, and yet there is doubt concerning the relation of this alteration of the nerve cell-bodies to the symptoms of meningitis.

Numerous bacteria were found within the nervous tissue of my case, reported in this paper, and while Dr. S. S. Kneass, to whom I showed a section, recognized them as short bacilli, he was unwilling to give them a name. The symptoms of the case and a slight perivascular round-cell infiltration would indicate that these bacilli were probably within the tissues before death, and yet the recent paper by Zappert⁵ on the presence of micro-organisms within the spinal cord shows how difficult it is to decide whether a bacterial invasion has occurred before or after death. The intense alteration of the nerve cell-bodies in my case may possibly have been the result of a toxin, but it has not been demonstrated that this is the correct view.

⁵Zappert. Obersteiner's "Arbeiten," Vol. 7.

A CASE OF MUSCULAR DYSTROPHY.

(Landouzy-Dejerine.)

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The following case is worthy of record owing to the comparative rarity of this type of myopathic muscular atrophy.

The patient is a man, single, 39 years old, a native of St. Louis, but of foreign-born parents; by occupation a machinist. He followed his trade during many years until increased feebleness rendered it impossible for him to continue work. No history of his father's family is obtainable, but his father died at the age of 61 of some unknown disease; he was a drinker, given to excess. The mother is living, and 65 years old; the history of her ancestry is negative. There is no history of nervous trouble either in the father or the mother. The patient had three brothers, two of whom died in early childhood, the third died at the age of 18 of some acute disease; a sister died in childhood. The history of the health of these members of the family is negative. No paralysis or atrophy was ever observed in any of them.

In early childhood, the patient had an acute inflammatory disease of the lungs, but from the date of this illness until manhood he had no severe sickness of any kind. During his childhood he was active and agile and able to engage in the ordinary sports of boyhood. However, he states that he early tried to whistle, but that he was never able to acquire the accomplishment. His lips refused to act. At the age of 15 a bit of emery got into his left eye, and the eye was neglected for some time owing to his unwillingness to have it treated. From this accident he dates his recognition of his inability to completely close his eyelids. It is probable that this was of much earlier origin, and the accident served to call his attention to it. His present peculiarities of countenance, he says, he has had since he can remember; the depressions in his cheeks have always been noticeable, though more marked of late years. At the age of 24 he remarked a growing weakness in his right arm, affecting especially the movements of extension and flexion of the forearm. Later he noticed a similar weakness of the left arm. At the age of 27 he noticed some peculiarity of his attitude in standing and of his movements in walking. He found that at his work he was resting his weight unconsciously on the balls of the feet, so that

callosities were developed beneath the great toes, and became more or less painful and troublesome. He states that weakness has been always most apparent on the right side, a difference which he attributes to his greater use of that side. He gives no history of pain or of disturbances of sensation, except that in his right arm, above the elbow and throughout the muscles of that arm, he experienced aching and throbbing after having worked too long. This sometimes was troublesome and disturbed his rest. His greatest weight was at the age of 22—148 pounds.

The weakness noticed in early manhood gradually increased until he reached his present condition, which has kept him from active work for some years. He has attempted to perfect himself in writing, hoping to be able to employ himself in that way; but he met an obstacle in the cramping of his fingers when he continued the effort to write. He gives no history of ever having observed or felt fibrillary twitching in any of his muscles, and it may be added that repeated observation of him during several weeks has never revealed any such phenomenon. There has never been at any time vesical disturbance, and there has been no alteration of sexual power. The deep reflexes at the knees, the reflex of the tendo-Achillis and those in the arms, are present, but much diminished. The jaw-jerk is also present. The muscular power of the lower extremities is remarkably good for all movements, considering the evident amount of atrophy of the muscles. The grip is powerful, but stronger on the left than on the right side. Movements of the arm, especially those of extension and flexion of the forearm, and movements of the arm at the shoulder, are much weakened, though there is no actual loss of any single movement. There is neither objective nor subjective disturbance of sensibility.

An examination of the muscles of the body in detail reveals the following conditions, which are more or less clearly illustrated by the accompanying photograph: The skin of the brow is smooth, devoid of all the usual lines, and the patient cannot wrinkle the brow, though he can move the skin of the brow by contracting the occipito-frontalis and the orbicular muscles of the eyes alternately. He is unable to completely close the eyes, and his power to resist an effort to open them is much diminished. The natural form of the nares is altered so that the openings are mere slits, owing to the atrophy and weakness of the nasal muscles. The buccinator muscles are so reduced that the cheeks are depressed in deep indentations beneath the cheek bones. The corners

of the mouth cannot be raised; the mouth is prominent and the lips turn outward in a characteristic fashion (*pot de chambre*). The smile is transverse. There is no weakness of the essential muscles of mastication, which causes a prominence at the angles of the jaw. The tongue shows no atrophy and is normally protruded, but it is in constant vermicular



movement. The pupils react normally to light and in accommodation, and there is no evidence of weakness or paralysis in the external muscles of the eye. The edge of each cornea presents a distinct cloudy circle, which is identical with the so-called arcus senilis. It may be added that the patient has worn glasses for presbyopia for six years. The muscles of

the neck, while diminished in volume, have still much force, and are very firm to the touch. The muscles of the shoulder girdle are greatly atrophied. All these muscles are involved except the infraspinatus. The fibers of the pectoral muscles are scarcely perceptible, and at the seat of the supraspinatus there is a deep hollow on each side. The deltoids have almost disappeared over the points of the shoulder, but they present a characteristic ball-like prominence in the middle, which is evident in the photograph. The trapezius muscles are much reduced in volume, and also the rhomboids and the serrati, causing the characteristic wing-like projection of the scapulæ, with elevation of their superior angles. Other muscles of the back show no marked atrophy, and the patient complains of no weakness of the back. The abdominal muscles are in good condition. The biceps, coraco-brachialis, brachialis anticus, and triceps are reduced to thin bands on each side, but when the biceps contracts there is noticeable in its middle third a ball-like prominence, which shows that the active fibers in the muscles are those of its middle third. This phenomenon is observable on both arms. The contrast between the muscles of the arm and those of the forearm is very striking. The forearms are reduced in volume, but the muscles are abnormally hard, and their force, as shown by the grip and the power to resist extension of the hand on the wrist is, if not normal, at least up to what might be expected of a forearm of similar size. The intrinsic muscles of the hand are somewhat affected. This is true especially of the hypothenar and thenar muscles, and there is evidence of slight atrophy of the adductor pollicis and interossei. The atrophy of the intrinsic muscles of the hand is more marked on the right side. The muscles about the pelvis are reduced in volume but have practically normal force. The atrophy of the muscles of the thighs is most marked in the lower third. The quadriceps extensor cruris being the muscle most markedly implicated. In the leg, the calf muscles are in fairly good condition, with some tendency to contracture, but the anterior tibial muscles are much reduced in volume. The intrinsic muscles of the feet have not suffered decidedly. There is toe-drop on the left side in walking. All the muscles react to faradism, even those most atrophied, though for the latter a more powerful current is necessary to induce contraction.

It is remarkable that the patient is still capable of almost all ordinary movements, notwithstanding the great wasting of so many muscles. He suffers more from weakness of movement than from actual loss of movement. The strength of

his hands and forearms is such that he indignantly repels any suggestion that he is weakened in this respect.

The most remarkable condition observable, aside from the muscular atrophy, is the hard and wooden-like consistency of the muscles that have thus far escaped marked atrophy. They do not give the sensation of normal muscle, but rather that of a muscle in intense contraction, even when they are at rest.

Another point of interest is the entire absence of subcutaneous fat over the whole body, so that the patient has the appearance of being reduced to skin and bones.

This wasting of subcutaneous tissue, contemporaneous with muscular atrophy, and the evident abnormal condition of the muscles which are not yet advanced in atrophy, are worthy of special remark.

In the history of the development of this condition, it may be noted that undoubtedly the beginning of the trouble was in the face, that it subsequently attacked the arms, and later the lower extremities became involved, and finally the hands have been invaded. Even at the present time, with atrophy far advanced and quite generalized, the wasting at the roots of the extremities predominates decidedly over that at the distal extremities of the members. The characteristic prominence of the middle third of the wasted deltoids is also worthy of note. The absence of all fibrillary contractions, as well as the absence of all sensory and central disturbances are points which render a diagnosis of myopathic atrophy certain, and the order in which the atrophy has manifested itself places the case among those first described by Landouzy and Dejerine.

In this case, though there is no evidence of atheromatous changes in the vascular system, it is worth noting that there is some evidence of early senility in the condition of the cornea and the necessity for glasses to correct a presbyopia which began at the age of 33.

NEW YORK NEUROLOGICAL SOCIETY.

December 4, 1900.

The President, Dr. Frederick Peterson, in the chair.

THE TERMINAL CONDITION IN A CASE OF DIPLEGIA.

Dr. William M. Leszynsky presented a man, 21 years of age, in whom the chief feature of interest was a trembling of the hands, which had existed as long as he could remember. Nothing was known of his early history except that he had always been nervous. His mother had died of cancer of the uterus. The trembling had always been more marked on the left side, and his condition was apparently growing steadily worse. On careful examination no disturbance of sensibility could be detected. There was excellent muscular development on the left side, and a spinal curvature, probably arising from the use of one side more than the other. There were no signs of atrophy. There was some asymmetry of the cranium. There was no disturbance of vision, but concentric contraction of the visual field. There was no nystagmus, and the pupils and fundi were normal. There was a positive tremor when the patient was at rest, and a more active tremor on motion. He held the left arm in extension, but close scrutiny showed that all of the rigidity was in the extensors. The elbow-jerk was elicited only on the right side. Both knee-jerks were exaggerated. Ankle-clonus had been demonstrated on both sides, though it was much more marked on the left. Dr. Leszynsky said that this man had probably recovered from a paralysis that he had had at one time, and was now suffering from a terminal condition of an infantile palsy. Undoubtedly there was a good deal of functional disturbance added to the organic trouble.

Dr. M. Allen Starr thought the case was an athetosis on the left side, and that probably the same lesion, in a minor degree, was present on the opposite side. It was apparently a post-diplegic condition.

Dr. B. Onuf called attention to the lordosis and the unusual muscular development of the deltoids.

Dr. E. D. Fisher also looked upon the case as one of cerebral diplegia most marked on the left side, and with the athetoid movements often seen in such cases. This extreme muscular development seemed to him not at all uncommon in this class of cases. He desired information concerning the electrical reactions.

Dr. B. Sachs said that there could be no doubt that the left side was the center of disturbance, and it was also probable that a part of the tremor was functional. The condition of the muscles in the scapular region seemed to him fully accounted for by the spinal curvature present.

Dr. F. Peterson agreed with the diagnosis of post-paralytic atetoid form of movement. Where the paralysis was slight he thought these finer movements were more likely to be present.

Dr. Leszynsky regarded the remarks of Dr. Sachs a sufficient answer to those of Dr. Onuf. He had not yet tested the electrical reactions. It seemed to him that this man could be benefited if properly trained. Hypnotism had been suggested, and it seemed to him worthy of trial. The method used for ataxics would probably prove beneficial; it had just been commenced.

REPORT OF TWO CASES OF SPINAL TUMOR WITH OPERATION AND REMOVAL.

Dr. M. Allen Starr said that five years ago he had been able to collect 145 cases of spinal tumor, in 22 of which operation had been undertaken. In the cases forming the subject of the present paper the symptom, pain, had been very prominent, and this, together with the symptoms of pressure on the cord, had allowed of the diagnosis being made.

Case I.—Mrs. E. W., 35 years of age, had been in good health previous to March, 1899, at which time she had begun to suffer from paroxysms of pain near the heart at night. They were not brought on by exertion, but were much increased by touching a region to the left of the nipple. From September, 1899, to May, 1900, she had been treated by many physicians for angina pectoris, hysteria and other disorders. Nitroglycerine had always intensified the pain. On May 10 Dr. Theodore Janeway had examined her and found her in an extremely nervous condition, and suffering from constant pain. The left knee-jerk was exaggerated. Over the left side of the dorsal spine was extreme sensitiveness from the first to the eighth dorsal spine, and over the corresponding intercostal nerves at the angles of the ribs. There was no affection of the arms, and the internal organs were normal. When examined by Dr. Starr, on October 20, she was suffering much from pain at the level of the fifth and sixth intercostal nerves, much more marked on the left side. There was very marked tenderness over the dorsal region from the first to the seventh dorsal spine. A condition of partial anesthesia was found on the trunk and total anesthesia in the legs. Her legs were quite powerless, but there was no atrophy of the muscles. Ankle-clonus was present on both sides, and both limbs were cold, blue and edematous. She had recently been unable to control the sphincters. Dr. Janeway had made a diagnosis of tumor of the spinal cord at the fifth dorsal segment. On October 22 she had been operated upon by Dr. McCosh at the Presbyterian Hospital.

On dividing the dura an extremely edematous state of the

pia was observed, with one white plaque lying upon it. The cord was smaller and whiter than normal, and was not pulsating. No tumor was found. Three days later the wound was enlarged upward and the dura found to pulsate freely at the upper level, but not lower down. A tumor, $1\frac{1}{8}$ inches in length, lay upon the cord. It was oval, had a distinct capsule, and was removed *en masse* without difficulty. Subsequent examination showed it to be a fibroma. The cord had been reduced to about one-half of its diameter beneath the tumor. No attempt was made by Nature to heal the first operation wound, and in spite of great care an extensive bed-sore developed over the hip. In the second week after operation the constricted feeling became less marked. The operation wound healed very slowly. In the fourth week after the operation the woman had constant fever, probably because of the extensive bed-sores. The spinal incision healed about this time, but she died a few days later. The autopsy showed a softened condition of the cord opposite the exit of the second dorsal nerve from the dura, and the fifth and fourth dorsal nerves could be traced into this area. Owing to the rudimentary condition of the spine of the third cervical vertebra, an error of one vertebra had been made in the count at the time of operation.

The case seemed to emphasize the fact that there should be no delay in operating for spinal tumor after the diagnosis had been reached. In this case the delay had arisen from an effort to try the effect of anti-syphilitic treatment, the husband being known to be syphilitic. Bed-sores had developed before the operation, and had continued to extend in spite of it, and had eventually caused death from sepsis. Gumma of the spinal cord is quite rare, only 26 such cases having been found in a series of 400 cases. The tumor had been found about two inches higher than had been anticipated. Reed's table had been used as a guide at the first operation, but, according to Bruns, the operation should be done two segments above the upper limit of pain. This advice was nearer the truth in the present case. The level of the pain was about eight inches lower than the level of the tumor; hence in operating for spinal tumor the level of the cord should be exposed at least four inches higher than the level of the spinal nerve in which pain is found.

Case II.—Mrs. K., 46 years of age, had been in good health until May, 1900, when, after a slight injury, she had been delivered of a dead child. Soon afterward she had begun to suffer pain over the left hip, and this pain had extended down to the left knee. It had caused insomnia and

progressive loss of health. In September she had noted numbness of the left foot. On October 16, on admission to the Presbyterian Hospital, she was pale and feeble, and seemed to be suffering from paroxysms of pain over the left trochanter and that side of the sacrum. There was a drop-foot due to paralysis of the peronei and anterior tibial muscles. The bladder required catheterization, and the rectum had to be emptied by enema. There was an area of anesthesia down the back of the left thigh and leg, and a smaller area was found on the right side. Under mixed treatment the paralysis extended and the pain became more severe. An area of tenderness to pressure was found over the second, third and fourth lumbar vertebrae, and pressure here aggravated the pain in the hip. It seemed probable from these facts that there was a tumor pressing on the cauda equina, and extending as high as the level of the exit of the second lumbar nerve. The functions of the sacral nerves and last lumbar nerve were evidently affected on the left side. A diagnosis of a cauda lesion was reached because of the level of the pain. On November 15 Dr. McCosh removed the spines and arches of the second, third and fourth lumbar vertebrae. Dissection showed a tumor involving both the soft and hard tissues of this region. The spines and arches had been eroded by the tumor, which subsequently proved to be an endothelioma. This tumor had invaded the spinal canal and produced pressure on the dura. The patient was in a critical condition for two days after operation, but since then had improved rapidly, and had had no pain since the operation. A considerable degree of atrophy had developed in both peronei. The wound had healed perfectly, and there was no evidence of recurrence. It was reasonable to hope for recovery unless there should be speedy recurrence.

Out of 145 cases of spinal tumor that Dr. Starr had collected, the history had been fairly clear in 122. Of 76 cases an operation should have been feasible, and, according to the pathological report, in 75 per cent. the tumors could have been removed.

Dr. A. J. McCosh said that he had found spinal surgery much more satisfactory than brain surgery; certainly the localization of the lesions had been more satisfactory. It was difficult to say, however, that a lesion is situated at any one segment of the spinal cord, but as a portion of the cord equal to three or four vertebrae must be exposed a slight error in localization is not of great importance. He had had recently a case presenting symptoms almost exactly like those of the first case reported by Dr. Starr. The line of anesthesia had been almost the same, but there had been no paralysis of the arms. The autopsy showed a crushing injury to the cord between the fourth and sixth cervical

vertebrae. The ordinary rules laid down had indicated a lesion much lower down, and he had in this way been misled at the operation. He had not found laminectomy a very serious operation, as a rule, most of the patients having exhibited comparatively little shock; hence, one should not hesitate in advising the operation when the diagnosis was sufficiently clear. He agreed thoroughly with what Dr. Starr had said about the inadvisability of delaying the operation for weeks in order to give antisyphilitic treatment a trial. He had met with a number of cases in which he believed the fatal result was attributable to such delay. When bed-sores were already present the case was practically hopeless, the patient almost invariably dying from sepsis. It was well to remember that tumors of the cord are usually found higher up than the estimated level. By beginning above and working downward, it seemed to him that the healing process would be favored. He was not of the opinion that there was any good ground for believing that the operation of laminectomy so weakens the spine as to lead to disability. Mention was made of one of his cases in which a man was engaged at an occupation requiring the frequent lifting of heavy weights, yet he had felt no inconvenience as a result of the operation upon his spinal column.

Dr. Pearce Bailey reported the case of a man, 41 years of age, who had been treated for some time previously for a variety of troubles. When seen in May he had stated that about 15 months previously he had begun to have intense pain on the inner side of the left thigh. There had been an interval of a few months, in which this pain had almost subsided. There was slight atrophy in the left leg; the left knee-jerk was absent; there was very slight anesthesia. The case seemed to be one of tumor of the cauda equina. Dr. McCosh had operated on him on the 22d of May. He had removed the last dorsal and the first and second lumbar vertebrae, and had exposed what had looked at first like a blood clot, but microscopical examination had proved this to be a round-cell sarcoma. Although it was probable that all of this sarcoma had not been removed, the man had done extremely well all these months, was free from pain, and had resumed his occupation.

Dr. Sachs coincided with those who had advised against delaying in these cases in order to try specific treatment. He was thoroughly in favor of operating just as soon as the diagnosis had been established with reasonable clearness. It was a great mistake, in his opinion, to look upon operation as a last resort. Gumma of the cord was quite rare, and even in these cases very little had been accomplished by the administration of the iodides; hence, such treatment might very well be neglected. In one of his cases in which the operation had been done quite early the man had been restored promptly to health. In another case he had not been allowed to operate early, and the recovery had been far from satisfactory. It seemed to him that a little too much importance was attached to the mere matter of localization; the important question was in regard to the nature of the morbid process and whether or not a tumor was present. In Pott's disease the sensory disturbances were sometimes as marked as where there was a tumor of the cord. Pain was the important symptom, but this was applicable more particularly to dorsal rather than to ventral tumors. He was not prepared to speak regarding the relative frequency of these two forms of tumor. He was of the opinion that a very extensive laminectomy could be done without causing notable disability or deformity. Early operation, he felt sure, would make spinal surgery much more satisfactory than brain surgery.

Dr. Theodore C. Janeway said that he regretted very much that in his case the diagnosis of spinal tumor had not been made sooner. There had been pain a year previously, but the pain had disappeared for a considerable time, and when he had first seen her she had been so extremely nervous that the question of hysteria had been seriously considered. The case had progressed very rapidly during the part of the summer in which he had not seen her.

AN ANALYSIS OF THE SYMPTOMS OBSERVED IN CASES
OF TUBERCULOUS MENINGITIS AT THE
BABIES' HOSPITAL.

Dr. C. A. Herter read a paper with this title. There were 24 cases of tuberculous meningitis, and in 15 of these there were autopsies. In these 15 cases, 6 were at the age of 8 months; 7 were 1 year old or under. In 9 cases of tuberculous meningitis without autopsy, 6 were 5 months old. These figures showed that tuberculous meningitis was not so rare in the first year of life as had been supposed by some writers. Nineteen of the cases had run their course in less than one month. The fontanelle had been markedly distended in 7 of the 24 cases, and in 3 there had been a marked excess of fluid found at autopsy. In one case the fontanelle had been depressed—a patient sick for four or five months. In six cases there had been a delay in the closure of the fontanelle. Vomiting had been noted in 19 of the 24 cases, and had been the first symptom in 14 cases. In five in which there was vomiting, the autopsy showed nothing different from the cases that had presented vomiting. In 11 cases there had been marked constipation. In cases coming to autopsy there had also been tuberculous lesions in the intestine. In several of the cases there were tuberculous ulcers of the colon, and yet constipation instead of diarrhea had been present. The pupils were unequal in 12 of the 24 cases, and dilated in the others. The pupils were contracted in only two cases. Nystagmus was observed in four cases, and strabismus in 10 cases. In the cases showing strabismus there were marked lesions at the base and in the interpeduncular space. There were general convulsions in 50 per cent. There was no case which did not present either rigidity or convulsions. In cases without meningitis, but with tubercles in the brain, convulsions were not so common. Paralysis was noted in 10 of the 24 cases of tuberculous meningitis, and was monoplegic in a number. The variability of these palsies was a rather notable feature. In the cases without meningitis, but with tubercles in the brain, no paralyzes were noted. The *tache cérébrale* was noted in seven cases, and flushing of the face in 10 cases. All the cases of tuberculous meningitis with

autopsy had presented stupor or coma, or more or less irregularity of respiration, while these had not been observed in any of the cases with tubercles, but without meningitis. Hyperesthesia had been noted in only one case, and in only one had there been a well-developed cephalic cry. Retraction of the abdomen had been noted to a greater or less degree in 15 of the cases of tuberculous meningitis, but not at all in the other cases. The fever had not been high in the uncomplicated cases, and the pulse had shown nothing distinctive. In the cases without meningitis marked opisthotonos and convulsions had been the rule, and early vomiting had been much less frequent than where meningitis was present. Only two or three of the cases had presented solitary tubercles. In all of the autopsy cases the cerebral tuberculosis had been clearly secondary. The intestine was the seat of tuberculous lesions in 11 of the 12 cases in which the intestine was examined. The knee-jerks were increased in a large proportion of cases, and absent in only two. An interesting feature was that at times the knee-jerks would be alternately exaggerated and absent.

Dr. Leszynsky said that he had made some observations in children under three years with regard to the knee-jerk, and had noted that in the early stages the knee-jerks had seemed to be absent, but as soon as the pressure symptoms appeared the knee-jerks became exaggerated and remained so until death.

Dr. Sachs said that the diagnosis of tuberculous meningitis was usually delayed by the general practitioner because he overlooked, as a rule, the cranial nerve symptoms so commonly found quite early in these cases, and waited for some of the more common and typical symptoms. He would like to know whether examination of the fundus and lumbar puncture had been of any diagnostic aid.

Dr. Herter replied that lumbar puncture had been practised in a few instances, and in two or three tubercle bacilli had been found. The examination of the fundus had been undertaken in so few cases that no deductions could be made. None of the cases diagnosticated as tuberculous meningitis had recovered.

Dr. Sachs said that in a series of cases of sporadic meningitis lumbar puncture had been made, and the diplococcus had been found in almost every instance. He had been surprised also at the large number of recoveries in these cases of sporadic meningitis in which the diplococcus had been found. Their clinical course had been greatly at variance with the older descriptions of cerebro-spinal meningitis. The onset had been very violent, the fever lasting often a week or more, and then recovery was rapid.

Dr. Herter said that in the cases he had seen there had been a much more violent onset than in tuberculous meningitis.

PHILADELPHIA NEUROLOGICAL SOCIETY.

November 26, 1900.

The President, Dr. William G. Spiller, in the chair,

TRAUMATIC PARALYSIS OF THE UPPER LIMB.

Dr. F. Savary Pearce presented a man, 29 years of age, who was said to have been struck on the head, neck, and left shoulder on December 29, 1899, by a heavy timber. He had no fracture of the skull, but was much contused about the head, neck, and left shoulder, and remained unconscious for 17 days immediately succeeding the accident. The left arm had been entirely paralyzed since this trauma. The skiagraph, made at the Medico-Chirurgical College, showed multiple fractures of the scapula, including the acromion process, with comminution in the glenoid cavity. It was doubtful whether the clavicle was fractured or not. The spine of the seventh cervical vertebra was said to have been fractured, but this was uncertain. On July 9, Professor Rodman excised the head of the left humerus, with considerable relief of the painful joint symptoms. At this operation he freed the musculospiral nerve from any possible pressure. Dr. Pearce first saw the man September 9, 1900, and found a typical left upper paralysis of the limb. The arm was much atrophied. There was obtuseness of sensation throughout, with anesthesia of dorsal and palmar surfaces of the hand, with brittle nails, shiny skin, and claw-like hand. Reaction of degeneration was found everywhere throughout the left upper extremity. Massage and galvanism employed for three months, and strychnine in large doses, with general hygienic and constitutional treatment had been without any benefit. Dr. Pearce had advised the man to have the arm amputated, for the following reasons: Very likely there may have been fracture of the vertebra; certainly there was a serious meningitis at the time of the accident, and these, with the direct blow to the brachial plexus, had contributed to irreparable nerve injury and consequent degeneration of the cords. There had been recently trophic ulcerations of the fingers and elbow due to the hand being put into moderately hot water and to mild pressure from the sling in which the flail-like member was supported. The clavicle had not caused any pressure, since the bone was normal and in proper position. The good health of the man, the entire lack of improvement at the end of eleven months, seemed to Dr. Pearce to justify amputation of the useless limb.

Dr. Charles K. Mills said that the question presented was a serious one. The case looked like one of traumatic brachial neuritis of a grave character, and although a year had elapsed with very little improvement, yet one year was a comparatively short time in a case of this sort. Personally he should feel very loath to advise so serious an operation

as amputation in a case of this kind. It is well known that improvement takes place in cases of serious nerve degeneration after the lapse of a long time.

Dr. F. X. Dercum thoroughly agreed with Dr. Mills that we should hesitate a long time before amputating the arm. He, however, thought that it would be proper to expose the brachial plexus in its course and entire nerve trunks if practicable. Sometimes, where suturing or other surgical measures cannot be done, reparative processes seem to be stimulated by the operation itself.

Dr. William G. Spiller agreed with Dr. Mills and Dr. Dercum that it would be desirable to search for the nerves and to reunite them if they were severed. Cases of remarkable return of power after the ends of the nerves have been reunited, even after the lapse of a long period, have been reported.

A CASE IN WHICH TABES AND DISSEMINATED SCLEROSIS WERE PROBABLY ASSOCIATED.

Dr. Charles K. Mills presented a case with the above title from his service in the Philadelphia Hospital. The notes were prepared by the resident physician, Dr. Theodore H. Weisenberg.

The patient, H. M., white, aged 76, shoemaker by trade, an old man of fair intelligence, gave a history of having been "nervous" for 22 years past, being worse in the last ten years, during which time he has had a tremor of the head and arms, increased on effort. The tremor did not cause him much annoyance, but about a year ago he noticed that he could not walk at night without great difficulty. Shooting pains in the legs came on at about the same time, to which was added the feeling of a tight band being drawn across the chest at about the level of the eighth dorsal vertebra. He denied syphilis, but was a moderate drinker. Bladder and rectum remained normal. Features somewhat fixed. When at rest the arms do not shake, but on effort a tremor is present. In grasping a glass of water the hand shakes, the tremor being somewhat increased as the hand reaches the mouth, this increase showing more markedly in the left hand. The tremor does not, however, seem so marked on effort as that of disseminated sclerosis. The limbs are not wasted, and power is fair in both upper and lower extremities. The legs show no tremor, but distinct ataxia with recurring shooting pains.

On both sides knee-jerks were absent, as were also responses from the quadriceps, gastrocnemius, and tendo-Achillis. The cremasteric reflex was active, and the Babinski reflex was absent. Sensation was good.

Dr. G. E. de Schweinitz reported as follows: "Right eye, pupil round; left eye, pupil oval, at axes of 75. Light reaction lost; accommodation present; no nystagmus; no failure of ocular movements; eye-grounds normal.

The case was exhibited because of the combination of symptoms of an undoubted tabes with a tremor probably of the intention variety. Discussion was asked on the question as to the nature of the tremor, whether it was a true intention tremor, indicating disseminated sclerosis associated with tabes, or whether the association was that of a senile or toxic tremor with tabes.

DISSEMINATED SCLEROSIS OR AMYOTROPHIC SCLEROSIS,
WITH BULBAR SYMPTOMS.

Dr. Charles K. Mills also exhibited the following from his Philadelphia Hospital Service, the notes having been prepared by the resident physician, Dr. Theodore H. Weisenberg:

H. S., white, aged 38, dyer, was admitted to the hospital February 7, 1898.

The history obtained on admission is as follows: He enjoyed good health up to four years ago, when he became impotent. He then began to have a tremor of the entire body, the head included, and his gait also became uncertain and staggering, like that of a drunken man. His legs became more and more spastic. He suffered from headache, dizziness, and pain in the back and across the loins. He has had a tendency to undue lachrymation for a year. Recently he has had difficulty in spitting, the saliva being thick and ropy. He had incontinence of urine for three months, which disappeared. His emotional symptoms have steadily increased. Speech has become much affected, and he recently has had some difficulty in swallowing both liquids and solids.

The intelligence of the patient is fair; his memory is good. He has little or no control over emotional expression. On being talked to, on attempting to talk himself, or spontaneously at any time he cries or laughs immoderately. His face flushes intensely, his eyes water, and he is unable to control his features. Sometimes crying and laughing are incongruously mixed. He cannot keep his face in repose except for a few seconds, or for a minute or two at most. He has difficulty in vocalization, articulation, and enunciation. His speech is dysarthric.

The tongue can be protruded only a few mm. beyond the lips; it appears small, moves to the right and left, but not upwards well. An irregular movement is present, but there is no fibrillary tremor. The saliva dribbles from his mouth almost constantly. He rapidly gulps his food and occasionally chokes.

On account of the condition of the patient, it has been impossible lately to obtain a satisfactory examination of his eyes. The record of the last examination, made by Dr.

Charles A. Oliver, about a year ago, showed: Pupils, two mm.; irides freely and equally mobile to light, accommodation and convergence; extra ocular movements intact; vision in both eyes normal.

Hearing and taste are normal. Smell is lost, except for the most pungent odors. With his eyes shut he staggers and falls. Gait is decidedly spastic and quite uncertain, there being a tottering motion; he drags his left foot more than the right. His arms are well nourished and muscular, showing no loss of power. There is no tremor of the arms, but slight ataxia, more marked in the right. All reflexes are exaggerated, more so in the left side. Ankle-clonus is persistent on the left, and present but less marked on the right side. Babinski reflex is present on both sides. Sensation for touch, pain and temperature is normal; no astereognosis; but in the last six months he has had a dead feeling in the left arm and leg. Bladder and rectum are normal.

The case was shown as one of unusual interest, and as presenting some difficulties of diagnosis between disseminated sclerosis or amyotrophic sclerosis with bulbar symptoms, and pseudo-bulbar paralysis of non-sclerotic type.

Dr. A. A. Eshner said that the character of the tremor in the first case was suggestive of paralysis agitans. Paralysis agitans need not be excluded by the fact that the tremor occurs only on intentional movement. Wollenberg, in the article on paralysis agitans, in Nothnagel's "*Specielle Pathologie und Therapie*," refers to cases in which tremor was not only absent during rest, but was induced or increased by volitional effort. Apart from its rhythm and range, there is something distinctive about the tremor of paralysis agitans that is difficult of description. It might be called an intrinsic tremor. The speaker knew nothing about the association of paralysis agitans and tabes dorsalis, but he could see no reason why the two should not be concurrent in a single individual. Eichhorst ("*Practice of Medicine*," 1899, p. 610) relates that he has observed one case of tabes dorsalis complicated by paralysis agitans.

Dr. Wharton Sinkler said that in this case the tremor was more characteristic of disseminated sclerosis than of paralysis agitans, in which the tremor is continuous during rest, and in the early stages is arrested by voluntary effort. Although the knee-jerks were absent and the pupillary reflexes also absent, the patient had not the characteristic ataxic station. If the speaker had been asked a short time ago if there were any difficulty in the diagnosis between disseminated sclerosis and locomotor ataxia, he would have said "No," but he had recently seen a young man, aged 24 years, with no history of venereal diseases, but with a history of venereal excesses. He was healthy until four years ago, when he began to notice unsteadiness of gait and some defect in speech. There is entire absence of the knee-jerks, exceedingly unsteady station with the eyes open, and when the eyes are closed it is impossible for him to stand. On the other hand, he has no changes in the pupillary reflexes; he has scanning speech and tremor of the head. The speaker thought that the case was one of Friederich's ataxia.

He thought that in Dr. Mills' case there was a mixed lesion, a lesion involving the posterior segment of the cord, and also a higher lesion of the nature of disseminated sclerosis.

Dr. F. X. Dercum remarked that ataxia was, of course, not a necessary symptom in tabes, although it was present in the vast majority of cases. He thought that this case must be regarded primarily as a case of tabes. Whether or not the tremor justified the diagnosis of a lesion elsewhere was a question. He was inclined to think that it did.

With regard to the second case, he thought that there was in that a cerebral lesion. The extreme emotional mobility, the presence of symptoms referable to both arms and legs, without wasting and without fibrillary tremor, he thought pointed to lesions either within the centrum ovale, or within the capsule or possibly in the cortex, together with possible secondary changes in the pyramidal tract. He thought that amyotrophic sclerosis was not indicated because of the good power of movement over the tongue and lips, the absence of atrophy of the tongue, the absence of fibrillary tremor, and the absence of wasting in the muscles of the hand and elsewhere. While it was impossible to make a positive diagnosis, he was inclined to look on the case as one of pseudo-bulbar palsy.

Dr. D. J. McCarthy did not understand why, from a clinical standpoint, multiple sclerosis was excluded. This disease may involve the posterior segments of the cord as well as other parts. He did not see why the clinical picture of multiple sclerosis involving the posterior roots should differ from that of tabes.

Dr. William G. Spiller said he thought that the first case was probably one of tabes. He was led to the conclusion from the occurrence of sharp shooting pains, loss of knee-jerk, girdle sensation and Argyll-Robertson pupil. Sharp shooting pains and Argyll-Robertson pupil are not common in disseminated sclerosis. Loss of knee-jerk also is not common, although he had seen cases in which the knee-jerk was absent.

The second case he thought was probably one of pseudo-bulbar palsy. In amyotrophic lateral sclerosis, implicating the medulla oblongata, the course of the disease is usually more rapid than it had been in this patient.

Dr. Charles K. Mills regarded the first case as one of tabes, on account of the bilateral character of the symptoms, the absence of sacral and lumbar reflexes, the presence of the Argyll-Robertson pupil, and the absence of the peculiar condition of the optic nerve present in disseminated sclerosis. It is true, as Dr. McCarthy stated, that in disseminated sclerosis the lesions may be anywhere, that they may be of various sizes and may attack the postero-lateral or posterior columns.

The tremor he felt certain was increased by willed effort. He did not agree with Dr. Eshner in his description of the tremor of paralysis agitans. The term intrinsic does not explain it. It is a uniform or stereotyped, rather than a jerky, irregular tremor, as seen in disseminated sclerosis. While intention tremor may be present in paralysis agitans, it is not the rule.

Dr. F. X. Dercum presented an anomalous case of paralysis and dystrophy of muscles probably dependent upon both neural and spinal lesions, but not primary neurotic atrophy.

A CASE OF MYOPATHY OF LATE AND GRADUAL DEVELOPMENT, BUT WITH RELATIVELY RAPID CHANGES UNDER OBSERVATION.

Dr. F. X. Dercum presented a man in whom the arms had begun to get weak about eight years previously. The weakness began very gradually, only incapacitating him for

work after three years. He had never suffered pain; his ailment consisting merely of weakness of the arms and of wasting in the muscles. He denied all venereal trouble. In 1897 he was a well developed man, with the exception of the arms. The muscles of both arms were much wasted, and patient had little strength in them. The hands were large and the fingers tapering. The reflexes in the arms were abolished. The legs were large and well formed, and the knee-jerks feeble. There were nowhere any sensory losses. Heat and cold were normally recognized and distinguished. The sphincters were normal, as were also the eyes.

In 1898 the quadriceps of both thighs were found enlarged, giving the thighs and hips a feminine type.

In 1899 both knee-jerks were found to be abolished. Little change had taken place since the last examination in the muscles of the arms. The wasting was slightly more accentuated. Flattening of the thenar and hypothenar eminences of both hands was now quite evident. The action of both deltoids was now also decidedly impaired. The face seemed slightly flattened on both sides, with smoothing out of the wrinkles. There was slight wasting of the muscles of expression.

In October, 1900, there was marked flattening and smoothing of both cheeks. The nasolabial folds were shallow. There was marked flattening of both orbiculares palpebrarum. The eyes were not firmly closed. The eye-lids also drooped very slightly, giving the patient a sleepy look. The angles of the mouth drooped on both sides. The lips were well protruded. He could not retract and properly elevate the angles of the mouth as in smiling. The abdomen was full and almost pendulous. Shoulders and trunk were thrown backward as though from weakness of the *erectores spinæ*. The patient stood with his chin drooping forward on his chest, but he extended the head and threw it backward without effort. Wasting had become accentuated in both upper arms, and was more marked in them than in the forearms. The patient was unable to flex the arms at the elbows at all. Both hands were now somewhat tumid and livid. He could still extend and flex the digits of left hand, but though he could flex the digits of the right hand, he was unable to extend them afterward. He stood with his knees retroflexed. Gluteal regions anteriorly on both sides were atrophied. Both calves were now decidedly enlarged. There was some lividity of both legs, knees, and feet. The patient was now also very flat-footed on both sides. The arch of the right foot was completely lost. The entire plantar surface was in contact with the ground. The arch was less completely lost in the left foot.

This case was of much interest because the more striking changes had occurred while the case was under observation. The involvement of the face, for instance, had begun only in the last year, while the hypertrophy of the thighs had begun within a little over two years. The other changes noted had all become accentuated within the last one or two years. The relatively late period at which this myopathy developed, 35 years of age, was also of interest.

A CASE OF MULTIPLE NEURITIS, PASSING INTO THE DUCHENNE-ERB TYPE OF BRACHIAL PLEXUS PALSY.

Dr. D. J. McCarthy presented from the Polyclinic Hospital a man of 28 years, compositor by occupation, who had used alcohol to excess for many months. He was troubled with abdominal pains and intense constipation during the summer of 1900, and in September began to lose power in his arms and legs. In a few days after the appearance of the first symptoms he was unable to lift either arm or hand. At the end of a week he lost power in his legs, and was compelled to go to bed. He remained in bed two weeks, and has continued to improve up to the present time. After three months he had regained a fair amount of power in the legs, and in the flexors of the forearms and fingers, but there remained almost complete paralysis of the deltoid, supraspinatus, infraspinatus, biceps, pectorals, and the extensors of the wrist. In all these muscles atrophy, with more or less complete reactions of degeneration, was marked. Reflexes were lost; tenderness over the nerve trunks was present, and diplopia, due to third nerve involvement of the right side, was observed. A blue line on the gums is still present. The case is one of interest on account of the double etiology of lead and alcohol, and because after the acute symptoms had subsided there remained the clinical portion of the combined shoulder paralysis of Duchenne and Erb.

Dr. Charles K. Mills said that these cases suggested to him the question of the peripheral nature of some symptoms which we do not regard as of peripheral origin. In one of the cases, in which ataxia and various other manifestations were present, the autopsy showed no lesion in the cord, but nerve degenerations.

Dr. William G. Spiller said that he had seen these cases with Dr. Dercum, and that in the first one it was exceedingly difficult to make a diagnosis. The symptoms did not fully correspond with those of any known disease. He thought that a cerebral affection could be excluded. If the case were one of muscular dystrophy, it was something more.

He referred to a case recently reported of flaccid paralysis of the upper limbs with spasticity of the lower limbs dating from birth. In such a case one might be induced to diagnose hemorrhage into the spinal cord in the cervical region, as one lesion would explain the symptoms. The necropsy showed that two lesions existed. The paralysis

of the upper limbs was of peripheral origin, and the spasticity of the lower limbs was explained by a cerebral lesion.

In Dr. Dercum's first case the muscles in the superior part of the upper limbs were affected, whereas the muscles in the lower part of the upper limbs were almost intact. If the lesion were in the cord, it was probably in the fifth, sixth and possibly seventh cervical segments. If within the spinal cord it must be some lesion that had destroyed the anterior horn on each side. The lower limbs were not very spastic. If the lesion were on the outside of the cord, it might be a syphilitic pachymeningitis implicating the nerve roots of the upper part of the upper limbs, and causing pressure on the lateral columns, with exaggeration of the knee-jerks. The almost complete integrity of the muscles in the lower part of the upper limbs showed that the complete paralysis of the lower limbs was not caused by a lesion in the upper part of the cervical enlargement. The tenderness on pressure and the spontaneous pains were like those of neuritis, but the exaggerated reflexes in the lower limbs were against the diagnosis of neuritis.

The patient from his clinic, shown by Dr. McCarthy, he said bore some resemblance to Dr. Dercum's case, although there was a less degree of atrophy. He believed that Dr. McCarthy's case was one of neuritis.

Dr. F. X. Dercum said that it was possible that there were two lesions, one in the peripheral nerves, the other in the cord. He did not see how we could escape the significance of tenderness over the nerve trunks and the pain. Might not the same toxic agent which produced the neuritis also have caused the lesions in the cord?

Dr. D. J. McCarthy remarked that Krafft-Ebling had reported a case of brachial nerve palsy due to infection. He thought that a cause which would affect the peripheral nerves might also affect the spinal cord. In a case of Erb's palsy, due to tainted meat, Oppenheim had called attention to the fact that tainted meat is a common cause of encephalitis. If that be a cause of a peripheral condition, he did not see why it could not cause a lesion in the spinal cord or in the brain.

Dr. Guy Hinsdale said, with reference to the possibility of lead being the cause of the lesion in Dr. McCarthy's case, that it was quite unusual to have lead infection in compositors from the absorption of lead from type, type-metal being of a hard alloy of lead and antimony, and not liable to give off small particles that could be absorbed by the skin or stomach. He did not doubt, however, that in the present instance the symptoms were those of lead poisoning.

Dr. D. J. McCarthy said that the early symptoms were distinctly those of lead. There was pain in the abdomen with marked constipation. Later there was double wrist-drop and symptoms in the lower extremities which looked more like those from alcoholic poisoning, on account of the excessive tenderness in the muscles themselves.

A CASE OF UNILATERAL OCULO-MOTOR PARALYSIS.

Dr. A. R. Allen presented from the Polyclinic Hospital a man, 51 years of age, who denied strenuously any venereal infection. He had been referred by Dr. J. Adams. One year ago he began to suffer from severe and constant supra-orbital pain. Glasses relieved this for a few weeks, but it returned, and in a month his left eyelid began to droop. Since this time he has had three attacks of weakness without unconsciousness, but accompanied with leftsided headache and

tingling of fingers. For the last four or five months he has had severe pain over left eye. He has never had vertigo. Gait with eyes closed is normal. He has no Romberg's sign. He is often very drowsy.

O. S. nerve round and red with slight blurring of edges. Complete paralysis of inferior rectus and superior rectus, and partial paralysis of internal rectus. The external rectus acts. The inferior oblique is paralyzed. The superior oblique is intact. The iris is without reaction. Fields normal. There is present a degree of exophthalmos on the left side, and tenderness on palpation to roof of left orbit.

Dr. F. S. Pearce said that he had recently seen at his clinic a case of paralysis of a similar type in a man, who stated that the condition had followed some operation done upon the eye. This would be of interest as regards the etiology of some cases, since infection following operation might cause a peripheral neuritis affecting branches within the orbit, causing the paralysis.

Dr. William G. Spiller remarked that the drowsiness and exaggerated patellar reflexes made him fear the presence of a neoplasm implicating the base of the brain, though possibly also within the orbit. It might be a syphilitic lesion.

Dr. Wm. G. Spiller reported a case with the symptoms of cerebro-spinal meningitis, with intense and general alteration of the nerve cell-bodies, but with little evidence of inflammation. (See p. 140.)

Dr. D. J. McCarthy said, with reference to the pseudo-meningitis which occurs in typhoid fever, that he had examined a brain from such a case sent to him by Dr. Stengel. There was no degeneration in the nerve cells of the cortex. There were changes in the ependyma with the deposit of some granular substance. He was under the impression that there was some change in the cerebro-spinal fluid leading to exudation and pressure. In young children suffering from diarrheal affections, it is not uncommon to have symptoms of meningitis and yet find no evidences of meningitis at the autopsy. A German observer has called attention to the fact that there is a certain amount of chromatolysis in these cases due to hydremia. In a case of acute internal hydrocephalus he had examined, the nerve cells of the cortex showed no chromatolysis or other change.

Dr. F. S. Pearce called attention to the occurrence of serous exudates in cases of high temperature. He thought that many cases diagnosed as meningitis are of this serous type. In a case recently seen a child had had three attacks of what was called meningitis, with three incomplete recoveries from the hemiplegia which followed these attacks. In the second attack the temperature was 108°.

Dr. William G. Spiller called attention to the impossibility in some cases of making a diagnosis of meningitis from the macroscopic appearances. He had just examined the brain and spinal cord from a case of typhoid fever. The typhoid bacillus had been found in the meninges, but he had not found signs of meningitis. It has been shown that the mere presence of bacteria within the tissues at necropsy is no evidence that they were there before death, as in many cases there is post-mortem invasion. If we find round-cell infiltration with the bacteria within the tissues of the nervous system, there is more reason to conclude that the bacteria were the cause of the symptoms.

Periscope.

CLINICAL NEUROLOGY.

FORMES CLINIQUES DES PARALYSIES DU PLEXUS BRACHIAL. (Clinical Forms of Paralysis of the Brachial Plexus.) HENRI GRENET (Archives Générales de Médecine. Vol. IV, October, 1900).

From an exhaustive and interesting study on this subject a number of important conclusions may be derived. (1) **MIXED FORMS OF PARALYSES:** (a) One can describe as many forms of the paralysis as there are segments in the plexus. There exist root paralyses, both intra and extra spinal; paralyses of the first, second and third segments of the plexus, and paralysis of the terminal branches. (b) An examination of the collateral nerves of the plexus determines the form of the paralysis. (c) It is possible to recognize the root origin of a superior paralysis by the involvement of the supra and infra spinous muscles innervated by the supra scapular nerve. One recognizes the intra-spinal origin of a superior paralysis by the involvement of the serratus magnus. (d) Inferior root paralysis of the first portion of the intra-spinal segment is recognized by the oculo-pupillary phenomena. But an inferior root paralysis is not accompanied by these if the seat of the lesion is beyond the sympathetic anastomosis. (e) There does not seem to exist any apparent and important clinical difference between an inferior extra-spinal root paralysis and an involvement of the first segment of the plexus. (f) All of these forms are secondary. Only two great clinical types exist: The root paralyses and the terminal paralyses. (g) The paralyses described under the name of paralyses of the plexus, properly so-called, assume sometimes the root type (first segment), at other times the terminal type (third segment). These do not constitute a special clinical form, but accessory types dependent on the one or the other of these two great divisions.

(2) **MOTOR PARALYSES.** (a) The pure motor paralyses ordinarily result from isolated lesions of the anterior roots. Sometimes the lesion may extend beyond the union of the anterior and the posterior roots without any resultant sensory symptoms. (c) Lesion of the two roots, at least, is ordinarily necessary to determine a motor paralysis. In some cases lesion of a single root is sufficient to produce a paralysis. The motor root distribution seems then subject to some individual variations.

(3) **SENSORY PARALYSES.** (a) The sensory paralyses seem to result in all cases from intra-spinal lesions (before the blending of the two roots) of the spinal roots. (b) Lesion of the three roots *may* not suffice. Lesion of one root may be sufficient to produce sensory symptoms. The individual variations appear greater in the sensory root distribution than in the motor distribution. (c) The restitution of diseased roots by healthy ones is not always complete. Very limited zones of anesthesia may appear after lesions of a single root, despite the integrity of other roots distributing fibers to the same territory.

(4) **DIAGNOSIS.** (a) The paralyses of the root type are characterized by the localization of the symptoms to a particular muscular group and by the band-like disposition of the anesthesia. The paral-

yses of the terminal type are distinguished by the limitation of the symptoms to the exact area of distribution of one or several peripheral nerves. (b) Hysteria is recognized especially by the distribution of the sensory symptoms. (c) Paralysis of the peripheral nerves may simulate those of the root type when several nerves are simultaneously involved or when the symptoms extend to the territory of neighboring nerves.

JELLIFFE.

DE L'HEMIPLEGIE TRAUMATIQUE (Traumatic Hemiplegia). RENÉ MARTIAL (Nouvelle Iconographie de la Salpêtrière, 13th Year, Nos. 3, 4 and 5. 1900).

This is a very careful study of hemiplegia following head injuries. The following abstract aims only to mention some of the general facts deduced from this study. The paper presents a careful analysis of forty-seven cases of traumatic hemiplegia, including in this number some personal observation of the author. The following is the general scheme of the paper: A study of cases of traumatic hemiplegia in all ages, except the first years of life, from the point of view of etiology, pathology, clinical symptoms, and of subsequent effects of such injuries, which have to do principally with the psychical state, thus medicolegally of interest. The first observations of traumatic hemiplegia found in literature is by a Lyons physician, Fouhoux, in 1844. The etiologic factors are varied in this present series of 47 cases; 21 are due to blows on the head, 11 to pistol shots, 10 to falls on the ground, 4 to penetrating instruments, and 1 from a burn in the region of the temporal lobe in a child. The left parietal region, the right temporal, orbital, malar and the occipital are the regions of the head in their order of frequency with respect to the location of the injury followed by hemiplegia. As a predisposing cause alcohol occupies the first place. In the 47 cases, 17 were alcoholic; especially is this so in the central hemiplegias. There are two main forms of this condition, traumatic simple or immediate hemiplegia and late traumatic hemiplegia. In the first are included those where the hemiplegia follows immediately on the trauma. In the second are included those in which the hemiplegia occurs after the lapse of a certain time. In the series of cases studied under the first division, some of the facts noted are these: Hemianopsia is frequent. Dilatation of the pupil was found seven times. Strabismus present in a few instances. Aphasia observed ten times. Elevations of temperatures, observed in acute form; the pulse rate is increased up to 150 or 160. Both these latter symptoms are only temporary. Under the second group are described cases which, in general, follow this description: After some head injury, as a rule without any external evidence of trauma, the patient seemingly recovers, with the exception of a feeling of fatigue or dizziness. Soon afterwards the hemiplegia develops with aphasia, etc. These cases are not traumatic hysteria, for post-mortem examination shows often very definite lesions in the interior of the brain, the cortex being uninjured. The time elapsing between the injury and the development of the symptoms is variable, from 36 hours to 2 or 5 months or more. As the result of experiments with blows and projectiles on animals, the fact is noted that traumatism can produce hemiplegia by a direct or by an indirect action on the brain, by causing a hemorrhage or an encephalitis. In the latter case, preëxisting affections must be considered. The diagnosis of the seat of the lesion is generally easy. In point of prognosis the author is of the opinion that traumatic hemiplegia is an affection which has a well marked tendency to recovery. In this regard it is

necessary to note that there is often found a condition that might be termed temporary recovery; for example, after a bullet wound in the brain, the hemiplegia and other symptoms apparently clear up in a surprisingly short time. The wound in the skull closes, the ball, as shown by radiograph, is still lodged in the brain, and the patient goes back to his former manner of life without, apparently, suffering any inconvenience from the foreign body in the brain. Frequently such a patient, after a certain period of wellbeing, will be taken suddenly with severe headache and die of cerebral abscess. Therefore the continued presence of a bullet in the brain is always a matter of grave significance. Prognosis of traumatic hemiplegia is always serious; first, on account of the infirmity, which can persist; second, on account of the apparent and temporary recovery. In regard to treatment, the operative interference in case of hematoma is mentioned. Medicolegally the author lays great weight on the influence of alcohol, both in regard to its being a predisposing cause and on account of the alcoholic state during which so many head wounds are received. A careful and precise clinical history of all the cases upon which this article is based, is included in the text, with critical and explanatory remarks, which make the paper extremely valuable and interesting.

SCHWAB.

THE PHYSIOLOGICAL INFLUENCE OF THE DUCTLESS GLANDS. O. T. OSBORNE (New York Medical Society. May, 1900).

The relationship of many diseases of metabolism usually classed as neurotic is so close to the physiology of the ductless glands that the paper of the author is of interest to the neurologist. Dr. Osborne said that of late years we have come to realize that three glands, whose functions were entirely ignored at the beginning of the century, are absolutely necessary to life. These are the pancreas, the thyroid and the suprarenal bodies. It is not improbable that a fourth set of glands, the parathyroids, are also necessary to life. It is important to remember that at forty-five there occurs a physiological under-secretion of the thyroid, and that after this subjects put on weight and arteriosclerotic and fatty degenerative changes in the heart and blood-vessels are liable to occur. At the same time there is increased blood-pressure. In infants, it is probable that there is very little suprarenal secretion. As a result, the vasomotor system is not well under control, and thermotaxis, or heat regulation, is very easily disturbed. The atrophy of the thyroid at forty-five is probably associated with atrophy of other important glandular structures in the body. This glandular atrophy bears some important relation to the occurrence of the menopause. In this connection it is important to remember that 80 per cent. of the cases of Graves' disease occur in women. It is not improbable, therefore, that the thyroid in the female is in a state of much less stable equilibrium as regards its physiological condition than it is in the male. The occurrence of at least temporary enlargement during menstruation and of a certain amount of permanent enlargement after pregnancy in many cases seems to indicate that this unstable equilibrium is associated with the vicissitudes of the sexual system. It is probable that all our dosage in order to make up for the absence of secretion of the ductless glands has been too high. Nature does not supply so much material.

Where gigantism occurs it is practically decided that there is always increased pituitary secretion. Acromegaly always means a perverted secretion of the pituitary body. A number of cases of

tumors of the pituitary body have been reported in which no signs of either gigantism, or acromegaly could be noted. It is very probable that in these cases some portion of the gland was left unchanged and normal secretion continued. It must be remembered that in all of the examined cases of acromegaly an enlargement of the thyroid existed. This may have been due to a compensatory enlargement with the intention on Nature's part, as it were, of making up for the perverted pituitary secretion. It may, however, have some direct connection with the acromegaly. There are two parts, as will be remembered, to the pituitary body: the hypophysis cerebri and the infundibulum. This latter portion has some connection with the maintenance of the proper constitution of the blood. Howells has noted that it is affected in such diseases as scurvy and in other severe blood dyscrasie.

Under the administration of pituitary-gland substance certain of the symptoms of acromegaly are often relieved. The intense earache which occurs so often has been known to disappear. The very severe headache so characteristic of the disease may be greatly relieved. There is a certain fullness of the lips and hands, which may become less while pituitary substance is being taken. This may return after use of pituitary gland is discontinued. Suprarenal-gland material does not raise blood-pressure when it is taken by the stomach, or even when it is administered subcutaneously. It must be put directly into the blood stream by intravenous administration. In this matter a great deal has been said that will undoubtedly injure the cause of suprarenal therapeutics eventually by causing disappointment in the mind of those who trust to the statements of overzealous enthusiasts.

JELLIFFE.

GIGANTISME, ACROMÉGALIE ET DIABÈTE. (Gigantism, Acromegaly and Diabetes.) C. ACHARD and M. LOEPER (*Nouvelle Iconographie de la Salpêtrière*, 13th Year, No. 4. July-August, 1900. p. 398).

A case of acromegaly complicated by diabetes. The measurements of the various parts of the body are tabulated and photographs of the case give an excellent idea of the size of the man. Interesting in this case is the discussion of the relation of gigantism and acromegaly. The symptoms of acromegaly are not marked in this case, the ocular symptoms, the headache, point to an absence of the usual symptoms due to an involvement of the pituitary body. Brissaud believes that acromegaly and gigantism are one and the same disease, the development of which at the period of growth causes gigantism, and afterward causes acromegaly. The condition of glycosuria has been noted before in these cases, sometimes in the form of a simple alimentary glycosuria. The great oscillations in the quantity of sugar is noted in the case, changing in twenty-four hours from 386 to 4 grams.

SCHWAB.

HYSTÉRIE ET GOITRE EXOPHTHALMIQUE ALTERNES (Hysteria and Exophthalmic Goitre Alternating). C. FÉRÉ (*Nouvelle Iconographie de la Salpêtrière*, 13th Year, No. 5, September-October, 1900. p. 494).

A case in which hysteria and exophthalmic goitre are found together, the chief interest of which is rather in the alternation of the localization of the two syndromes than their mere coincidence. The hysterical stigmata predominate on the left, the symptoms of Graves'

disease on the right. Beclere has formulated the following theory in regard to hysteria and goitre: the syndrome of Basedow is recognized very often as a primary cause of hysteria; the hypersecretion of the thyroid gland is one of the manifestations of hysteria in the same way as the hypersecretion of other glandular organs. But the hypersecretion produces an auto-intoxication, which, like alcohol and lead, produce new hysterical symptoms. Thus it can be said that Basedow's disease is at the same time the cause and the effect of hysteria.

The case briefly: A woman, forty-nine years old, neuropathic history, various hysterical manifestations in past life, some following psychical shock of one kind or another, presents hemianesthesia on the left, more marked in the upper extremity than in the lower. All the special senses on the left side are affected, smell, vision, hearing and taste. The left eye shows visual field much contracted. Other subjective symptoms of a hysterical nature are found. On the right side alone there is a well-marked exophthalmos. The pupil is more dilated than on the left. The symptoms of Moebius, Graefe and Stelwagon were present on the right. The thyroid gland appeared normal on both sides. Pulse 96 at rest, 120 on movement, small and regular in character. A fine regular hand tremor, more marked on the right. A further interesting point in the case is that a daughter of this patient, fourteen years old, suffers from hysterical symptoms similar to those found in the mother at the same age. SCHWAB.

UEBER STÖRUNGEN DER SENSIBILITÄT BEI MORBUS PARKINSONI (Disturbances in Cutaneous Sensibility in Parkinson's Disease). J. P. KARPLUS (Jahrbücher für Psychiatrie und Neurologie, 19, 2, 1900, p. 171).

The general conception of Parkinson's disease is that the group of symptoms peculiar to it are purely motor in character. Charcot and Gowers believed that the cutaneous sensibility was absolutely normal. Wollenburg, who has written the most recent monograph on the subject in the Nothnagel series, asserts that the sensibility is objectively not disturbed. The author of this article, from a series of cases observed by him and others collected from literature, has been able to collect fifteen cases in which a cutaneous disturbance was objectively present. He presents his conclusions from a study of this series as follows: There are cases of paralysis agitans in which disturbances of cutaneous sensibility are present, and it is possible to show that these disturbances are not the expression of an accidental complication, but belong primarily to the clinical picture of the disease. In the six cases studied by the author himself, the sensory disturbances were as follows: Case I. Hyperalgesia in left upper and lower extremities, the motor symptoms being more pronounced on the left than on the right. Case II. Hyperesthesia and hyperalgesia in the right upper extremity. The beginning and the development of the motor symptoms were found in this region. Case III. Very marked hyperalgesia in circumscribed regions of the left lower extremity. Motor symptoms most marked here. Hyperalgesia of the back and upper arm in places. Case IV. Hyperalgesia and hyperesthesia in right upper and lower extremities. Motor symptoms more pronounced on right than left. Case V. Hyperalgesia of the right shoulder. Motor symptoms especially pronounced in the right arm. Case VI. Hyperalgesia in both upper extremities, paresthesia in the same localities.

To be noted is this, that no sensory disturbances in the extremity were found in which motor symptoms were absent. In respect to subjective sensory disturbances the author found in a series of 103

cases in Kraft-Ebing's clinic, 36, that is 35%, showed evidences of them. From the study of these cases the author notes some of the following conclusions: Sensory disturbances in paralysis agitans are not constant. The motor symptoms must still be regarded as the characteristic and prevailing features of the disease. If there is to be a satisfactory explanation of this disease, it must include the sensory disturbances and must seek to understand them. The prevailing theories of a purely muscular affection, of a disease of the motor centers, in other words of a purely motor neurosis, are untenable. Fränkel's theory, that a diseased condition of the skin plays an important part in its pathology, is not regarded by the author as proven by his own observations in this regard. The post-mortem findings in a case of paralysis agitans is included in the article. The skin, muscle and peripheral nerves, spinal cord by Nissl normal. Slight periarterial gliosis. Amyloid bodies in abundance. Beyond some slight senile changes, the central nervous system must be considered as normal.

SCHWAB.

ERYTHROMELALGIA. M. Kohane (Klinische-therapeutische Wochenschrift, 1900, No. 20, May 20).

The author presents a short summary of the present point of view relative to this disease. In the first patients observed by the author the toes were affected, and the disease showed a tendency to spread upward, but in patients seen since, the upper extremity, or both upper and lower, have been involved, and even internal organs, such as the brain, testicles, etc., have been the seat of the peculiar process. The pains, so prominent a feature, are of burning character, and are often extreme. They may be paroxysmal, but later become continuous and may be intensified during the night and with heat. The discoloration may be bright red or more of a bluish hue, and is diffused or circumscribed, sometimes nodular. Hyperesthesiæ and paresthesiæ of touch and pain occur. Of other nerve disturbances paresis of the limb, hyperæmia, rhagades, ulcerations and depraved nutrition of the nails may be noted.

Thus far it is impossible to offer an explanation of the nature of the disease, since it is not even settled whether it is a *morbus sui generis* or merely a manifestation of certain disorders of the sympathetic nervous system. The pathology, also, demands further study, but it seems certain that in some cases neuritis and perineuritis, as well as diseased vessel-walls, are present in the affected parts, while the cord may show the lesions of locomotor ataxia, syringomyelia, myelitis, etc. Several cases which seemed to depend on functional nervous disorders, especially hysteria, have been described, yet it is possible to have nothing but the local changes. The usual causes of neuritis, such as overexertion, exposure and syphilis, malaria, etc., must be regarded as contributing factors in its production.

There is no uniform method of treatment. Some patients do best with rest, elevation and the application of ice, while with others electricity, hydrotherapy and massage with ichthyol or ethyl chloride locally and antipyrin, salicylates, morphine, ergotine internally may relieve. When dependent on some underlying disease this must be treated.

JELLIFFE.

UEBER EIN NEUES SYMPTOM DER EPILEPSIE (A New Symptom of Epilepsy). Carlo Ceni (Centralbl. f. Nervenheilk. u. Psychiatrie, Oct., 1900).

Ceni says that for a long time he has been taking the temperature of epileptics at different periods of the day. In thus doing it he came

across a new symptom of epilepsy. This consists of a considerable lowering of the normal temperature, which may at any period of the day or night sink to 36, 35 or even 34° C., and may so remain for a half hour or an hour. This transient hypothermia, which the author detected in 12 out of 20 cases, appeared to be an epileptic equivalent. Sometimes this sinking of temperature occurred three or four times in one day. Usually several days or even weeks intervened. In some patients the attacks were very irregular, while in others they assumed a periodical character. There appeared to be no relationship between these attacks and the course of the epilepsy proper, and especially none with the epileptic attacks. Sometimes the fall of temperature preceded the convulsion but by an hour or two, but this was probably a coincidence. The author believes the occurrence of hypothermia in epilepsy furnishes a strong argument for the autotoxic theory of the disease. Hypothermia has been produced in animals by injection of epileptic blood.

CLARK.

ZUR FRAGE VON ZUSAMMENHANG DER MIGRÄNE MIT DER EPILEPSIE (Connection between Migraine and Epilepsy). Bernhardt (Deutsche Aerzte Zeitung, July 15, 1900).

Bernhardt reports a case of this association in detail, the patient being a man of much intelligence. As far back as the patient can recall he has had at times before his eyes a parti-colored spectral appearance composed of rays of primary colors, chiefly red and yellow. It exhibits a sort of rhythmical jerking, as if due possibly to the arterial pulse, and appears to grow, swell, and finally burst. In its stead remains a colorless expanse which slowly vanishes. He has seen the same object on many hundred occasions, at intervals of one or two weeks. Other spectra have been seen at very much longer intervals, perhaps once a year; in this latter, colors are but sparingly present. The spectra persists, whether the eyes are open or closed. The colored spectrum usually appeared at about noon, and while the sun was shining. Anger, excitement, etc., seem to be sufficient to provoke the phenomenon at times. At the age of two years patient had one attack of teething convulsions; when 5½ years old a prolonged convulsive attack was followed by a period of confusion. This attack may have been caused by sitting long in the sun, or by drinking strong coffee. When 15 years old, the spectral phenomenon appeared on one occasion with great intensity, and led up to a convulsion, constituting a sort of visual aura. In fact, we may have migraine without headache, and "ophthalmic migraine" frequently constitutes an epileptic aura. The patient had convulsions at very long intervals only; and several times he went five years without an attack. The spectra persisted throughout. During the few epileptic attacks the spectral appearance always constituted the aura. Bernhardt adds to the foregoing statement of the patient that the scotoma seen by him was either a visual aura or an abortive attack of migraine. Möbius has stated that the great majority of cases of migraine are incomplete.

CLARK.

DIE URSACHE DER MIGRÄNE (Cause of Migraine). J. Deyl (Klin.-therapeut. Woch., Sept. 2, 1900).

From the examination of a number of cadavers of patients suffering from migraine, with the view of finding some anatomical peculiarity to explain the symptoms of disturbed function of the ophthalmic nerve in this affection, Deyl advances the following explanation, which tends

to disprove the presence of a true paralysis: The ophthalmic nerve stands in close relation with the carotid artery in the cavernous sinus, while between the sinuses of both sides is placed the hypophysis, the lateral borders of which are in close contact with cavernous tissue. In case of cerebral congestion from intense mental activity or other cause, the cavernous tissue will tend to swell, with consequent compression of the afferent vessels of the hypophysis. This will, in turn, lead to enlargement of this organ, and, in case the space between the two cavernous sinuses should be narrow, compression of the ophthalmic nerve between the artery and the dura. Anything thus depleting the brain of blood, such as sleep, will diminish the pressure, and hence relieve the migraine. The author has found an abnormally narrow intercavernous space in a certain percentage, coinciding with the proportion of patients with migraine found.

JELLIFFE.

PATHOLOGY.

ON THE ACTION OF DIPHTHERIA TOXIN ON THE SPINAL STICHOCHROME CELLS. H. RAINY (Journal Pathology and Bacteriology. Vol. VI, No. 4 July, 1900).

This paper is the report of a pathologic research made to determine whether the paralysis which is known to follow poisoning by various toxic substances of bacterial origin, and especially that which results from the action of the bacillus of diphtheria, is associated with alterations in the motor cells of the anterior cornua of the spinal cord; and, if such alterations were found to exist, of determining their nature and the relation which they hold to the changes found in the motor nerves.

The author has confined himself more or less directly to the subject in hand. As a fixing agent he tried mercuric chloride, dissolved in normal salt solution. Hermann's fluid was used as an adjunct, Tolouidin blue, thionin, Unna's polychrome, Kernschwarz, Heidenhain's iron hematoxylin and Held's methylene blue and erythrosin were employed as staining agents. In the experimental research groups of rabbits were exposed to the action of (1) emulsions of the diphtheria bacilli; no lesions were obtainable in the one rabbit that died. (2) Toxin below the lethal dose; these did not bring about paralytic phenomena and no pathologic cell changes were obtainable. (3) Large doses of toxin. Paralytic phenomena could not with certainty be demonstrated and characteristic cell changes were not observed. (4) Subacute maximal doses of toxin. In these the rabbits developed paralytic symptoms at the end of the first week and soon died. The hind limbs were most affected. In sections of the spinal cord cell lesions were constant, thus showing that alterations are found here as well as in the peripheral nerves. Associated vascular changes may also occur. The cell changes in the anterior horns are definite and consist of moderate degrees of chromatolysis, an increased staining capacity of the achromatic substance for acid stains and vacuolation of the cell protoplasm. Rainy is inclined to believe that there are differences which are somewhat specific for this particular toxic agent. He thus upholds Nissl's idea of toxic specificity and constant pathologic alteration. The author also says that in diphtheritic paralysis the cell changes probably antedate the changes in the nerve fibres, although further confirmation is necessary to prove this definitely. A bibliography and interesting illustrations accompany the study.

JELLIFFE

THERAPY.

THERAPEUTICS OF SUPRARENAL EXTRACT. W. H. BATES (New York County Medical Society. May, 1900).

In a recent discussion of this subject Dr. Bates stated that there is no contraindication to the use of suprarenal extract. It acts as a simple muscle tonic and no disease in any organ is rendered worse by it. While one-tenth of a grain produces a distinct effect, two ounces produce no more. The substance is simply stored in the tissues for future use. It is especially useful when applied on mucous membranes. Where mucous membranes are hyperemic they are blanched by a single application. Repeated applications reduce any inflammatory condition that may exist. Normal mucous membrane is not deleteriously affected by the agent. The suprarenal extract keeps well in a solution of boracic acid. A freshly-prepared solution is preferable, however, especially for hypodermic use. If much of it is used in applications to mucous membrane it should be removed by tampons, as it consists of very unstable organic material, which may easily become contaminated and so give rise to infective processes. Where reported bad results have followed its use, it has practically always been because the solutions used were not aseptic. This substance has been used with very good results in all forms of conjunctivitis. In gonorrheal ophthalmia its effect has been better than any other remedy that has ever been suggested. In chronic glaucoma it lessens the tension, decreases the pain and seems to lead to improvements of vision. Deafness due to hyperemia is greatly relieved by a single application and frequent application will often cure, where other remedies used for a long time have failed. Acute rhinitis may be completely relieved by a single application. The nasal symptoms of acute influenza are so much lessened by the use of suprarenal extract that patients consider themselves entirely cured. The discomfort of chronic rhinitis is also relieved. Laryngeal phthisis finds in this substance one of its most potent remedies. It relieves especially the dysphagia which makes life so miserable and cure so hopeless for these patients. For the acute laryngitis of singers this is an almost unfailing remedy, one that enables them to take up their occupation again much sooner than any known drug. Suprarenal extract is considered by many a specific for hay-fever. It has been used with good effect in ulcerative stomatitis. In edema of the glottis a single tablet allowed to dissolve on the tongue has been known to give relief in five minutes. Bleeding after operations from the throat and nose in hemophiliacs is at once controlled. Suprarenal never leaves any tendency to the occurrence of secondary hemorrhage. In exophthalmic goiter the symptoms are often very strikingly relieved. In interstitial nephritis the amount of albumin passed is lessened and the general condition soon improves. JELLIFFE.

BROMIPIN. J. W. Frisier (Klinische-therapeutische Wochenschrift. 1900, No. 21, May 27).

As bromism is so frequently an uncomfortable by-effect of the administration of alkaline salts of the bromides, investigation has been turned in the direction of the newer bromine preparations, of which this is one. It is made by the action of bromine on oil of sesame and containing 10 per cent. of bromine. Bromism has never followed its use in the author's hands, whether a single large or repeated small doses were given. The drug passes the stomach unchanged, to be absorbed in the small intestine and to be deposited in the tissues, as are other fats. The bromine is gradually liberated. Its oily taste is sometimes objectional, in which case it may be given subcutaneously. In appearance and odor it differs but little from oil of sesame. JELLIFFE.

CHLORETONE AS A HYPNOTIC. F. F. Ward (Medicine, August, 1900, No. 8).

The author regards this drug as the best general hypnotic. He thinks that it is more certain than trional and sulfonal and less harmful. The only after-effect observed was a slight headache after taking the drug for several nights. He makes use of its sedative and local anesthetic effects in excessive hyperacidity due to nervous disease, in epigastric pain which interrupts sleep, and in acute alcoholism. In this latter it should be given in ten-grain doses in half an ounce of whiskey or brandy, followed in fifteen minutes by a raw egg beaten in milk. Ordinarily the dose is three to five grains in powder, capsule or in whiskey, repeated, if desirable. It is soluble 1-100 in water and 1-12 in alcohol.

JELLIFFE.

PSYCHOLOGY.

ON RELATIONS OF TIME AND SPACE IN VISION. J. M. McKEEN CATTELL (Psychological Review, VII, 4, July, 1900. Pp. 325-343).

Rarely has psychology offered to philosophy stronger absolute, that is, experimental, evidence of the necessity of the idealistic viewpoint than this article by Professor Cattell, of Columbia, presents. Its results are important to epistemology, for they demonstrate under practically the conditions of every day experience that what is objectively a time-series may appear subjectively as a space-continuum. More than this, the research corroborates many others in demonstrating that what one "sees," proverbially, to the average man, so sure, depends more on personal, or at any rate on racial, "utility and the whole content of present and past experience" than on the object serving as the occasioning stimulus. The visual mechanism, *e. g.*, is proved to be no mere organic machine mechanically photographing objects upon a sensorium, but rather a vital, mental instrument by which in part each personality constructs for itself its own objective world. Rarely does an experimental inquiry bring out this consequence, so trite in idealistic philosophy, but so continually important for the scientific observer, so well and so indisputably.

The article consists of three sections, namely, on "Perception With the Moving Eye," "The Fusion of Moving Objects," and "The Perception of Moving Objects." The two first consider certain facts and theories having close relation to the main purpose of the experiments, while the last describes the research proper. Under the first head there is offered an explanation of the novel fact that "in ordinary vision the spatial world of perception is reconstructed from a series of changes in time of the retinal images." Thus when the retinal elements are stimulated at a rate even over a thousand per second (the eye moving and the objects not) there is perfectly clear vision, a fact which indicates an extreme sensitivity and perfection in the visual mechanism. "We perceive a series of time changes on the retina as a spatial continuum because for our reactions it is in fact a spatial continuum," the rate of successive unitary retinal stimulation being far within the action-time of the cerebral process of conscious perception. Several possible other explanations of the facts are suggested and shown to be probably untenable.

Regarding the fusion of moving objects, the author maintains, with perhaps a slight straining of a highly speculative theory for such an application, that in the development of the perceptive faculties in hereditary, *utility* has been the controlling teleological criterion, so that at present "we perceive what is useful for us to perceive in order to direct our actions so as to preserve ourselves and attain our ends, and we usually perceive things in the way that is most conducive to

these ends." If the eyes could move faster than they can (their reaction-time is much longer than that of most bodily parts) it would be of no use, there being no brain mechanism of corresponding quickness. The blurring of rapidly moving objects is in practice no disadvantage, for, thinks the author, the perception of the wholeness of the object is not thereby lost. Complete fusion is never produced by the color-wheel, at least not in Prof. Cattell's experience, there being therefore no true chemical fusion in the retina. After images cannot be cited as contradictory to the extreme sensitiveness of the ocular visual mechanism, for they are undoubtedly cerebral phenomena, the author (like more and more of those familiar with the methods and functions of the brain) having "never cared for the physiological mythology of the Young-Helmholtz and Hering theories of color vision."

In the last section "The Perception of Moving Objects" is experimentally discussed, this section forming the larger mass of the article. Moving objects of two dimensions were exposed to the subjects' view for a very short time and record made by each subject at the time of what they perceived; this in short was the experiment, performed with many sorts of variation off and on for ten years with many subjects. Four sorts of apparatus were devised for this purpose, and are described, and two of them illustrated. One was a mere hand screen, containing a slit which could be moved over a background bearing the object; another instrument was an adaptation of a cylindrical chronograph to the drum of which the object was affixed; a third was a more complex apparatus, combining a pendulum arrangement with a stereopticon for the employment of classes of students as subjects.

The fourth apparatus, that wherewith the most accurate experiments were performed, was a wheel chronoscope devised especially for laboratory work of this sort. This machine cannot fail to be an useful one for many purposes in psychological laboratories. It consists of a wheel, one meter in diameter with a rim about 9 c. m. wide. Cards or colors placed on the outside of the rim pass by a slit in an upright board near by, and may be seen by the subject placed beyond. It is thus possible to exhibit a color or a series of colors for an interval dependent on the rate at which the wheel moves and the size of the colored surfaces. The intensity of the light and the size of the field can also be varied, thus permitting experiments on the relations of time, area, intensity and color in vision. The instant at which the color reaches the slit can be recorded by electric keys on the baseboard of the wheel, thus allowing experiments on discrimination-time and so forth. The wheel can be revolved at a constant rate by a motor, or can be turned by the fall of a weight attached to the inner rim. The latter method was used in these experiments, the wheel being held in position by an electro-magnet and released by pressure on a convenient key, then swinging like a pendulum. At and near the dead-point the rim is moving at a nearly uniform rate, and it is then that the colors pass the slit in the screen for judgment. The rate can be adjusted by the weight's position on the rim; it was in these experiments one meter per second. If, *e. g.*, a green surface 5 c. m. wide is attached to the outer surface of the rim followed by a red surface of like width, the observing subject has over an area of the retina through the slit, say 1 c. m. wide, first green exhibited for $\frac{1}{10}$ second, then following it in the same area red for $\frac{1}{10}$ second.

The experiments on moving objects thus shown briefly to the subjects were varied in many ways, as to rate of motion, time of exposure, area of exposure, number of stimuli, combinations of different colors, shape of the field, intensity of illumination, motion of

field before stimulus appeared, movements of eyes during exposure, etc.; only a few of these and the general conclusions are, however, reported in this article. It is the extreme individual variation in the perception which is of chief interest and importance. "With exactly the same stimulus different observers have entirely different perceptions"; this statement, a reproduction of the drawings made by ten advanced students, who successively served as subjects, amply corroborates. No two of these are alike, and in general they are so unlike as to in no wise suggest each other, or a common stimulus. The extreme vagueness of the first perception was to the subject an interesting point in the experience, and only after four or five or more exposures of the same object-stimulus did there arise in the mind a perception sufficiently distinct for the required reproduction with a pen or pencil on the subject's notes. Once attained, the perception was certain enough, sometimes changed on learning what the stimulus really was, but more often not, there being here evidently a rough measure of the power of suggested imagination over the subject's perceptions.

This research opens up interesting and deep-reaching problems for psychology to solve in detail, at which especially genetic psychology would be probably particularly successful, for the perceptual habits which the subjects' reports imply are assuredly neither the product of chance nor too obscurely hid within the experience of the youthful individual to be to some degree at least unrolled. In most general conclusions this research emphasizes two most philosophical propositions—one the practical every day meaning of idealism, the other the inevitable sovereignty of personality as a continuum of experience.

GEORGE V. N. DEARBORN.

A SENATE AMENDMENT to the Sundry Civil Bill, for a Psycho-Physical Laboratory, etc., has been introduced. The amendment reads: "For the establishment in the Department of the Interior of a Psycho-Physical Laboratory. For a salary of the Director of the Laboratory, four thousand five hundred dollars. For expenses incidental to the collection of sociological, anthropological, abnormal and pathological data, including the study of the criminal, pauper and defective classes, and for the preparation of special reports on results of work, and for all necessary printing, sixteen thousand five hundred dollars." This laboratory is not to be in competition with other psycho-physical laboratories in this country. Its purpose is to gather sociological, pathological or abnormal data, as found especially in children, and in criminal, pauper and defective classes, and in hospitals. Besides these data it is desired to gather more special data with laboratory instruments of precision and to make such experiments or measurements as are generally considered of value by psycho-physicists and anthropologists. A great number of specialists in America, and some in Europe, have written letters in favor of a psycho-physical laboratory in the Department of the Interior, and the idea has been endorsed by many of the medical and scientific journals of the United States and Europe. The Government pays out millions to catch, try, and care for criminals, and it would seem to be a good investment for it to establish a laboratory which will have for one of its objects the finding of the causes of crime, pauperism, and other forms of abnormality.

The National Prison Association this fall unanimously passed a resolution in favor of such a laboratory to study criminals,

Book Reviews.

DIE VASOMOTORISCH-TROPHISCHEN NEUROSEN. Eine Monographie von Dr. Richard Cassirer. S. Karger. Berlin, 1901.

The praise which Oppenheim has given to this work in the introduction will probably be echoed by every unprejudiced reader. The confusion existing in the classification of the vasomotor and trophic disturbances is so great that a careful study of these various manifestations of disease has been greatly needed. Cassirer has made as thorough a presentation of the subject as our knowledge at the present time permits. He gives in the first chapter a résumé of the views held in regard to the anatomy and physiology of the vasomotor tracts and centers, of the secretory tracts and centers, and of the trophic functions of the nervous system. He concludes, after his examination of the literature on this subject, that the cell-bodies of the anterior horns of the spinal cord have a nutritive influence over the muscles to which they send motor impulses. We shall pass rather hastily over this first chapter, as it is chiefly a discussion of the opinions of others, and direct our attention to the author's own views and investigations. It is pleasing to see how just he has been in his recognition of the writings of other men, and it is especially gratifying to observe that American medical literature has not been ignored.

The second chapter is devoted to a consideration of acroparesthesia. Cassirer thinks that the simple acroparesthesia should be distinguished from the form with vasomotor and trophic symptoms. Slight objective disturbance of sensation may be present in either form. The most common cause of this condition is an occupation that requires the hands to be kept much in water. The condition is chiefly subjective, and the symptoms are paresthesia, pain not confined to nerve territories, hyperesthesia, or hypesthesia, and vasomotor signs, although all these symptoms are not present in every case. The cases with pronounced vasomotor symptoms are transitional ones between acroparesthesia and Raynaud's disease. It is interesting to know that Cassirer found nervous instability in 20 of the 30 cases of acroparesthesia he examined, and in three pronounced hysterical phenomena. This is rather in opposition to the statements of those who believe that acroparesthesia is uncommon in persons afflicted with some form of neurosis. Cassirer believes that the condition underlying simple acroparesthesia is some disturbance of the sensory tracts in a part of their course; and underlying the vasomotor symptoms is some disturbance of the vasomotor fibers. It is probable that this alteration exists in the terminal portions of the sensory and vasomotor nerves, and is not confined to any one nerve. All this awaits anatomical proof. Acroparesthesia is to be distinguished from neuritis and neuralgia, from the paresthesia produced by pulmonary tuberculosis, from the professional neuroses, from hysteria, masked forms of tetany and acromegaly, and from organic disease of the central nervous system, as tabes or spinal syphilis. The means by which these distinctions are to be made are given by Cassirer. Acroparesthesia may exist indefinitely without complications. The faradic brush or faradic handbath offer the best means of treatment.

The German school has been slow in the recognition of erythromelalgia, and it is interesting to read what Cassirer has to say on this subject. In 7,000 cases in Oppenheim's polyclinic only one of erythromelalgia was observed. Cassirer gives an excellent critical review of the literature relating to this condition. In a number of cases, he thinks, the symptoms of erythromelalgia were merely associated symptoms, but in other cases the erythromelalgia is to be regarded as a *morbus sui generis*. Some of the cases are the result of irritation of the peripheral nerves, especially of the vaso-dilator and secretory fibers, and these are cases of "peripheral erythromelalgia"; others are of central origin, and this form of erythromelalgia is either a spinal or a bulbar neurosis with vasomotor, trophic, sensory and secretory symptoms. Both redness and pain must exist before the diagnosis of erythromelalgia can be made, although secretory and trophic disturbances are not necessary. Occasionally the differential diagnosis between erythromelalgia and Raynaud's disease is impossible. Acrodynia has the local symptoms of erythromelalgia, but they are associated with the general symptoms of infection, and the disease occurs as an epidemic. It is probably little known. Pick's erythrodermia consists merely of redness of the forearm and lower leg, without implication of the ends of the extremities. A disorder of this kind shows that erythromelalgia is something more than a vasomotor neurosis. Unfortunately, Cassirer has little to recommend of much value in the treatment of erythromelalgia.

In regard to Raynaud's disease, Cassirer believes that in some cases the symptoms may be observed in persons with an apparently independent cardiac disorder, or in those with arteriosclerosis from various causes, or in those with vascular disease of syphilitic origin, in whom the symptoms of Raynaud's disease may disappear after anti-syphilitic treatment. In other cases of Raynaud's disease signs of implication of the central or peripheral nervous systems are present. In the majority of cases, however, Raynaud's disease is an independent affection. The vasomotor and trophic tracts and centers are in a state of abnormal excitability, either as a congenital or acquired condition, and when the latter, it is from cold, rheumatism, intoxication, infection, etc., or reflexly from disease of peripheral organs. There is a close relation between acroparesthesia, erythromelalgia, scleroderma, acute angioneurotic edema, and multiple cutaneous gangrene.

It is not known whether scleroderma occurs primarily or secondarily to changes in the spinal cord, and certainly such changes cannot be of a very gross character. The diagnosis of scleroderma is usually easy when the skin is hard, smooth, and without folds, and there is abnormal pigmentation, loss of hair and local asphyxia and syncope. The disease may be difficult to diagnosticate in its early stages, or when the skin is not first affected, but the deeper portions are involved, viz., muscles, bones and joints. Scleroderma may begin as acroparesthesia, or as erythromelalgia. Progressive facial hemiatrophy may be closely related to scleroderma. Certain cases of scleroderma resemble syringomyelia and Morvan's disease, or myxedema. The therapy of scleroderma makes a sad chapter.

Acute localized edema has many resemblances to urticaria, and has been described as giant urticaria. It is not merely a simple angioneurosis, as, in addition to disturbances in the circulation of the blood, there are trophic or secretory changes. The question whether it is merely a symptom-complex or a *morbus sui generis* is not easy to answer. In some cases the edema is a very unimportant part of the clinical picture, as in Graves' disease or migraine, but in other cases

the edema is the main feature. Cassirer therefore makes two groups; in one he puts the cases in which the edema appears as a toxic, auto-toxic or infectious process, has an acute commencement, and is of short duration, like an intoxication or infection; and has no tendency to recur unless produced by the same causes operating again. This form is closely related to urticaria and purpura. In the second group he places the cases in which there is a direct or indirect heredity, nervous symptoms are prominent, and the attacks return with regularity and are independent of external causes. These two forms cannot be always sharply separated from one another. The treatment of acute circumscribed edema, if it occurs in connection with some other disease, consists in the treatment of the latter; the food that has a tendency to produce the edema should be avoided, the bowels should be regulated, massage and electricity may be employed, but drugs do not afford much hope of benefit.

The multiple neurotic cutaneous gangrene is not a *morbus sui generis*, but merely a symptom-complex. In the majority of the cases some disturbance of the nervous system seems to be the cause of the symptoms. There is a form of gangrene closely related to this neurotic gangrene, but probably dependent upon vascular disease. Some forms of gangrene are the result of hysteria. The multiple neurotic gangrene is occasionally a sign of some organic nervous disease, as syringomyelia or peripheral neuritis. In some cases urticaria is associated with the gangrene. Cases occur, however, in which the multiple neurotic gangrene has the appearance of an independent neurosis.

It will be seen from this review that, while Cassirer's presentation of these curious diseases is excellent, it leaves many questions unanswered.

SPILLER.

RECHÉRCHE CLINIQUES ET THÉRAPEUTIQUES SUR L'ÉPILEPSIE, L'HYSTÉRIE ET L'IDIOTIE. PAR BOURNEVILLE. Avec la collaboration de M. BELLIN, BOYÉR, CHAPOTIN, DARDEL, KATZ, NOIR, J., PAUL-BONCOUR et POULARD. Vol. XX. Felix Alcan. Paris. 1900.

Bourneville has presented twenty of these incomparable studies to the medical profession. As in the preceding volumes, the history of the service during 1899 is given. Here the usual array of statistical tables is conspicuous by the absence of any such mode of presentation. The gymnastic and manual training ideas are carried out to much greater lengths than in preceding reports. These are well illustrated in these reports, and the methods advocated should find their way into our charitable institutions. Such methods of instruction, it is true, are not new; in the higher class of institutions in this country they have been widely followed, but in the more or less badly managed and politically overseen institutions with us systematic efforts in teaching the idiot are often wanting. In the second part of the book there are a number of suggestive and excellent studies made by Bourneville and his assistants. Thus Bourneville and Chapotin report on the use of eosinate of soda in the treatment of epilepsy: The study is a model of its kind. They show that the drug has some very interesting effects on the mucous membranes and on the skin, which resemble in large measure the effects of bromism. Its action on the epilepsy is *nil*. A similar type of study is presented by Bourneville on *sedum acre*. He finds this also of little avail. Other studies on trophic disturbances of the skin, spasmodic hemiplegia, hysteria, influence of alcohol on the production of idiocy and of epilepsy, etc., follow:

Some important observations relative to the thymus are of interest

in view of the rather unique ideas of Ohlmacher on the persistent thymus and its relations to epilepsy. Katz and Bourneville in 61 normal children found that the thymus was persistent in every case. In reports of 168 individuals examined it was persistent. Its absence in many cases of idiots, epileptics and imbeciles has been noted by Bourneville, the average percentage of absence in such cases being as high as 25 per cent. We are glad to see studies of this type, and trust that many more volumes may be added to this illustrious series.

JELLIFFE.

A TEXT BOOK OF PRACTICAL MEDICINE. By William G. Thompson, M.D., New York. Lea Brothers & Co., New York and Philadelphia, Publishers.

The author states in his preface that "the advent of a new century makes appropriate a comprehensive review of the present status of medical practice." He makes no claim to originality, but simply a statement of such facts and principles as have received clinical proof, and avoids those which have only a speculative basis. From his long experience in the best hospitals of New York City, and many years spent as a teacher of medicine, Dr. Thompson is well qualified to write authoritatively on the subject; and this volume reflects his own views on disease and methods of treatment. One thing that specially commends the work is the space and lucid description given to those diseases which are fairly common, and the citation of cases illustrative of the disease, these cases for the most part having been taken from those occurring in the practice of the author. The field of medicine has been described under nine heads. Infectious diseases, taking in also fevers of obscure origin, *e. g.*, febricula, Weil's disease, Malta fever, etc., and the infections common to man and animals. Under diphtheria the antitoxin treatment is fully described and cordially recommended. Diseases of the digestive system are well described, particular attention being given to diseases of the stomach and intestine. Diseases of the peritoneum, liver and pancreas are also described under this heading. Diseases of the spleen, lymphatic system and ductless glands are next taken up, the diseases of the spleen being accorded a very brief description, while those of the thyroid, thymus and adrenals come in for a more exhaustive one. Diseases of the vascular, respiratory and urinary systems follow. In chronic Bright's disease two forms are described, viz., chronic parenchymatous and chronic interstitial nephritis. To the nervous system about 130 pages have been given, with a full, concise description of diseases of the nerves, diseases of the spinal cord, diseases of the brain, functional nervous disorders, and trophic and vasomotor disorders. Diseases of the muscular system comprise myositis and myotonia congenita. The last section takes up miscellaneous diseases, diseases due to parasites, and poisons and drug habits.

The work is specially adapted for the use of students and as a ready reference book for the general practitioner. The descriptions, as a rule, are clear and concise, and the treatment advised is that most approved at the present day. The volume contains about 1,000 pages.

ADAMS.

Miscellany.

A. DE WATTEVILLE has resigned from the editorship of *Brain*.

THE NEW OWATONNA, MINN., HOSPITAL was opened January 5.

DR. THEODORE KIRCHHOFF has been appointed professor of psychiatrics at Kiel.

DR. KERN has been appointed superintendent of the State Hospital for the Insane at Hastings, Neb.

DR. WILLIAM BROWNING has been appointed consulting neurologist to the Long Island State Hospital at Flatbush.

IT IS STATED that the two New Jersey State Hospitals for the Insane contain 150 insane criminals.

DR. JEAN M. WILSON, pathologist to the Delaware Hospital for the Insane, has sent in his resignation.

DR. W. D. ZOETHOUT has been appointed laboratory professor of neurology in Rush Medical College, Chicago, Ill.

THE NEW CENTRAL STATE HOSPITAL at Petersburg, Va., has recently been opened, and has accommodations for 160 patients.

DR. HENRY FOSTER, founder of the sanitarium at Clifton Springs, N. Y., died suddenly January 15, of heart disease.

DR. METIUS M. ECKELMANN receives \$100 a year from Elkhart County, Ind., for caring for the sick in its asylum.

THE NEW BUILDING at the State Hospital for the Insane at Harrisburg, Pa., has been opened. It will accommodate 300 patients.

DR. THOMAS E. HOXIE, of Spangle, Wash., has been appointed assistant physician at the Eastern Hospital for the Insane at Medical Lake, Wash.

THE LEGISLATURE will be asked to appropriate \$40,000 for a cottage and other improvements at the Michigan Asylum for the Insane at Kalamazoo.

DR. ALEXANDER YOUNG, of Arcadia, has been appointed assistant physician at the State Hospital for the Insane at Norfolk by the Governor of Nebraska.

DR. R. P. WINTERODE has been appointed pathologist at the Maryland Hospital for the Insane at Catonsville, to succeed Dr. Cornelius Deweese, who recently resigned.

THE BIBLIOGRAPHY of American Neurology and Psychiatry, on advertising pages xviii and xx, is becoming valuable. It already contains over 800 references, and furnishes a complete index of American literature on these subjects.

A BILL establishing a State hospital for dipsomaniacs and other inebriates is to be introduced at this session of the Indiana Legislature by Senator Charles Whitcomb.

DR. LIVINGSTON HINCKLEY, of Newark, N. J., has resigned the superintendency of the Essex County Hospital for the Insane, which position he has held for sixteen years.

IT IS STATED that the State of Illinois has purchased property to the extent of nearly \$1,500,000 near Alton, for the establishment of a hospital for epileptics.

DR. CLARK, superintendent of the Kingston Asylum for the Insane, Canada, has been appointed a commissioner to investigate the workings of the asylum at New Westminster, British Columbia.

DR. A. B. RICHARDSON, late superintendent of the Government Hospital for the Insane, has been elected to the chair of mental diseases in the Columbian Medical School at Washington, recently made vacant by the resignation of Dr. Foster.

DR. LINDSAY PETERS has been appointed resident physician of the insane department of Bayview Hospital, the city almshouse, by the Board of Supervisors of City Charities of Baltimore, Md.

GOVERNOR ODELL has resolved to give a personal hearing on the charges of gross extravagance which have been preferred against Superintendent William Austin Macy, of the Willard State Hospital, by J. F. Mahoney, of the village of Willard, N. Y.

DR. FREDERICK S. WARD has resigned the position of pathologist at the Taunton (Mass.) State Insane Hospital, which he has held for the past two years, and gone into private practice in Springfield.

THE BILL appropriating \$25,000 to the Alabama-Bryce Insane Hospital at Tuscaloosa, for the purpose of completing the department for negroes at Mount Vernon, was passed by the Senate without a dissenting vote.

THE HOPEWORTH SANATORIUM, Bristol, R. I., a private hospital for nervous diseases, was visited by fire recently and the Martha cottage was destroyed, entailing a loss of about \$6,000. The main building was uninjured.

DR. ARTHUR P. POWELSON has resigned his position as assistant physician at the State Hospital for the Insane at Middleton, N. Y., to accept the position of resident physician at the Homœopathic General Hospital at Rochester.

DR. C. B. SIMCOE, assistant physician at the St. Joseph, Mo., State Asylum for the Insane, has been chosen as superintendent of the new State Home for the Feeble Minded at Marshall, Mo., opened February 1.

DR. GEORGE A. ZELLER, superintendent of the Hospital for Incurable Insane, Illinois, who is now in the Medical Department of the Volunteer army in the Philippines, has decided not to return until the expiration of his term of service.

THE STATE HOSPITAL FOR THE INSANE at Norristown, Pa., has been visited by Senator Wentz and Assemblymen Barker, McGlathery and De Haven, for the purpose of determining the needs of the institution. The hospital has asked for an appropriation of \$90,000.

REV. CHARLES E. CONRAD, M.D., died recently at Quincy, Ill., aged 81 years. He went to British India in 1848, and, as the missionary who could heal, was much sought after by thousands of the natives. He established asylums for lepers and epileptics at Lohordagga, India.

DR. JAMES C. SMITH, of Agency, Mo., has been appointed second assistant at the State Hospital for the Insane, No. 2, St. Joseph, to succeed Dr. Charles B. Simcoe, who resigned in December, to take charge of the Missouri Colony for the Feeble-Minded and Epileptic at Marshall.

DR. T. D. CROTHERS, of Hartford, Conn., on February 18, began a course of lectures "On the Neuroses and Psychoses of Spirit and Drug Diseases" at the hall of the New York School of Clinical Medicine, 328 West Forty-second Street, New York City. The lectures are to be given on Monday evenings at 8 P. M., and the profession is invited to attend.

CAPT. E. R. RÖST, I. M. S., civil surgeon, Meiktila, Burma, has found a microscopic germ in rice and jowari grain, and also in the rice liquor which the cooleys and sepoys drink. The result of his experiments is the conclusion that beriberi is caused by this organism, which withstands a remarkably high temperature, so that it is not even always destroyed by boiling.

OWING TO THE OVERCROWDED CONDITION of the State Hospital for the Insane at Augusta, Me., the erection of a new hospital was begun six years ago at Bangor. Thus far \$440,000 has been expended, of which \$35,000 has been advanced by the Governor from his private means, and the new hospital is still incomplete. The legislature is to be asked for a further appropriation of \$200,000.

DR. WILSON, assistant at the Brockville Asylum, Ontario, has been transferred to London, Ont., to take the place of Dr. A. T. Hobbs, who has resigned to go into private practice. Dr. Laidlaw, assistant at the Orillia Asylum, has been promoted to the vacancy at Brockville, while Dr. St. Charles, also of Orillia, has been transferred to Hamilton to succeed Dr. Herriman, who has been transferred to the Kingston institution.

THE BOARD OF TRUSTEES of the Milwaukee, Wis., Hospital for the Insane, at their annual meeting, elected the following officers for the ensuing year: President, B. B. Hopkins; vice-president, A. L. Cary; secretary, A. F. Wallschlaeger; ex-officio treasurer, the county treasurer, Schultz; executive committee, G. E. Gustav Kuechle, David Vance, J. W. P. Lombard; visiting committee, Christian Wahl, John F. Burnham, Miss Lillian Wall, Mrs. Anna L. Wall, Dr. Ernest Copeland.

THE MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK, at its last meeting, passed a resolution petitioning the Governor to sustain the Pathological Institute of the New York State Hospitals for the Insane, and protesting against the threatened subversion of the work of the institute, which has been so highly commended by the scientific men of this and other countries. Similar petitions are being sent by other medical societies and privately by prominent physicians.

THE STATE COMMISSION IN LUNACY, in its annual report to the Legislature, says there were admitted to the State hospitals last year 4,795 new cases of insanity, against 4,201 the preceding year. The net increase at the close of the year was 714. During the last year there were 1,029 patients discharged as cured, and 900 more sufficiently improved to return home. In the cost of maintenance of 22,000 patients there was a gross reduction of \$297,171. The amount spent for new buildings and extraordinary improvements was \$662,948, as against \$1,126,043 for the preceding year.

THE STATE BOARD OF CONTROL, of Iowa, has promulgated a new set of rules for the government of all county, state and private institutions in Iowa in which insane patients are kept. A recently enacted law gives the board power to make these rules and enforce them.

A BILL introduced in the House of Representatives of Indiana provides for the establishment by the State of a village for epileptics. The sum of \$40,000 is to be appropriated for the purpose of purchasing a tract of not less than 1,000 acres of land, and not more than \$160,000 for the erection of buildings. Although the bill goes into many details, it does not suggest any particular site for the colony.

A NEW LUNACY BILL has been drawn up by Drs. Nelson H. Henry and John H. Girdner for presentation to the legislature, which provides that every judge to whom application is made for the examination of a supposedly insane person, shall designate a referee, and that it shall be the duty of the latter to be present at the examination conducted by the medical experts and certify as to its regularity. The bill also provides that to be eligible for the position of medical examiner in lunacy one must have had at least two years' experience in the care of the insane.

THE GRAND JURY has filed a scathing presentment denouncing the Bellevue Hospital abuses, and urging the removal of W. B. O'Rourke, late superintendent, Michael J. Rickard, late assistant superintendent, and Dr. John W. Moore, lately in charge of the insane pavilion. They found these officials had been grossly incompetent and negligent of their duties. District Attorney Philbin will heed this presentment after the trial of the three Hilliard nurses. Meanwhile, Commissioner Keller had already transferred O'Rourke and Rickard, and suspended and reinstated Dr. Moore, and placed Dr. Stewart in the position of superintendent. Commissioner Keller will, however, heed the jury's presentment, and prefer charges against the three officials whose dismissal was recommended, but he will give them a chance to answer the charges before removing them. The Grand Jury, in its report, recommended strenuously that nurses or attendants in the insane pavilion should be experienced trained nurses, and also that the physician in charge of the insane pavilion should be a practitioner trained and experienced in the modern treatment of the insane, and not a newly fledged physician.

THE MEDICAL BOARD OF BELLEVUE HOSPITAL, in its report made to Commissioner Keller, upon the charges recently brought against the management of that institution, admits many grave abuses, explains the causes of their existence, and outlines practical remedies. Considering the conduct of the insane pavilion, the Board endorses the recommendations already made by the committee of inspection, that the patients in the insane pavilion be placed under the charge of a competent, well-qualified physician, with suitable salary, who shall devote his time exclusively to their care. The Board further says that there should also be an assistant resident physician, so that the pavilion may never be without the presence of a competent medical attendant, and that the resident physician should be held absolutely responsible for the condition of every patient. They recommend that the nursing service in the insane pavilion should be in the charge of a carefully selected super-graduate nurse, assisted by trained attendants. They deplore the crowded conditions whereby epileptics, cases of hysteria, and even surgical mania are crowded together with alcoholics, but state that such crowding cannot be avoided at present, because there is no other place for epileptics and cases of hysteria which are noisy.

COMPULSORY TREATMENT OF LIQUOR AND DRUG HABITUÉS is the object of a bill to be introduced at the coming session of the Indiana Legislature. The bill provides that any habitual drunkard who is a public charge, or likely to become so, may on application to the county judge, either in person or by friend or near kin, making oath to the facts in the case, be sent to an institution where inebriates are cured. The expense, not to exceed \$100, is to be paid by the county of which the beneficiary is a resident. Provision is also made for the repayment of the money so expended, by the one benefited giving his note to the county commissioners and paying it by instalments or as a whole.

RESOLUTIONS HAVE BEEN PASSED by the Chicago Medical Society, Chicago Pathological Society, Chicago Neurological Society and Chicago Society for Internal Medicine, recommending the selection of at least four medical internes for each of the state hospitals for the insane; that such internes shall be selected by competitive examinations from graduates of the medical colleges in the State, recognized by the State Board of Health, that they shall serve for one year, and receive as compensation lodging, board, washing and \$100 at the expiration of their term of service, and that the professors of nervous and mental diseases of the five medical colleges having the largest number of students in attendance shall be the examiners to select these internes.

DR. HENRY FLOOD AND DR. E. A. REILLY, of Elmira, N. Y., are defendants in an action for \$50,000 damages brought by a man whom the doctors, after an examination, had pronounced insane. Although a commitment was made out the man escaped, and later returned to Elmira again. A second commission was appointed to examine him, but the patient took legal measures against the procedure. He was brought to New York City and was pronounced sane by Dr. Carlos McDonald, who examined him. The attempt to have him committed was discontinued. He alleges that the local decision declaring him to be insane was the cause of his losing his position in Elmira, and necessitated his removal to Brooklyn.

A RESOLUTION has been introduced in the Legislature of New Jersey calling for an investigation of the Morris Plains Hospital for the Insane. This action has been hastened because of a case in which it was charged that the wife of a citizen had been committed to the asylum when her friends believed her to be sane. She has recently been adjudged in possession of her right mind, and has been released. It is charged that sane persons have been committed to the hospital several times. A revision of the laws will also be asked for. It is hoped that some provision will be made for epileptics, so that they may be kept separate from the chronic insane.

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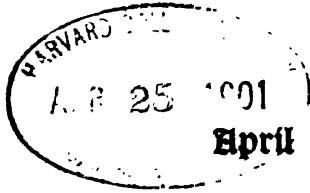
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TABLE OF CONTENTS ON PAGE ii and iv

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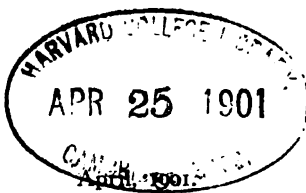
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THE CLINICAL VALUE OF ASTEREOGNOSIS, AND ITS
BEARING UPON CEREBRAL LOCALIZATION.¹

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Astereognosis has become established as an important symptom to be investigated in all cases at least of suspected cerebral disease. Many such cases are deemed normal as regards sensation, in which this investigation would not only furnish material aid in diagnosis but also further the study of cerebral localization. The importance of the subject has been recognised by various observers, to whose contributions (in which the expression *active touch* is more often used), reference is made in the exhaustive work of Verger² on Cerebral Anesthesia. The study was given an impetus in this country by the work of Dana,³ and the importance of testing

¹Read by invitation before the Philadelphia Neurological Society, February 25, 1901.

²Archives Général de Médecine, Nov. and Dec. 1900.

³Journal of Nervous and Mental Disease, October 1898, and December 1894.

for astereognosis has been emphasized in Philadelphia by the contributions of Dercum,⁴ Burr⁵ and Sailer,⁶ as well as by the practical application in diagnosis and treatment shown in the brilliant case of Mills and Keen.⁷

Complete hemianesthesia involving the trunk to the median line and including analgesia, whether the special senses are affected or not, generally means hysteria. In fact, complete anesthesia leaving off abruptly at a point short of the median line, for example, at the shoulder, is apt to fall in the same category. This variety of anesthesia is rarely to be confounded with that of organic origin. In hysteria the character of the astereognosis as well as the distribution of anesthesia and its completeness, will generally indicate the nature of the malady. Such patients, for example, while taking no notice of pinch or prick, and stating that no object is recognised when the stereognostic sense is tested, will handle objects naturally and freely with the affected hand. One such patient coming recently under our observation, through the courtesy of Dr. Shattuck, stated that no touch of any kind was felt up to the shoulder, and failed to recognise objects placed in the hand. She found no difficulty, however, in extracting her handkerchief from the recesses of her clothing, though it was concealed from view. This indication of subconscious recognition we have not found in astereognosis of organic origin. True cerebral anesthesia is recognised by its distribution and by its character. Its distribution is distal, that is, either limited to the extremities, more particularly to the hands and feet, or if involving also the trunk, the anesthesia shades off gradually as the middle line is approached. With regard to the character, the loss is generally more marked in the posture, spacing and localizing senses than in those of touch, pain, and temperature. In certain

⁴Journal of Nervous and Mental Disease, August 1899, and November 1900.

⁵Journal of Nervous and Mental Disease, May 1897, and January 1898.

⁶Journal of Nervous and Mental Disease, March 1899.

⁷Journal of Nervous and Mental Disease, May 1900. University Medical Magazine, October 1897.

of these cases the loss of pain sense is also marked, and to this class Verger has applied the name pseudo-hysterical.

An object placed in the affected hand of a patient with cerebral anesthesia is unrecognised if the eyes are closed—that is, the stereognostic sense (or sense of “active touch”) is lacking. For brevity we will use the term astereognostic type.

Cerebral anesthesia of the astereognostic type occurs in both cortical and central disease, between which we are unable to distinguish by this symptom alone as shown by the studies of Dejerine,⁸ and Long. With the aid furnished in many cases by hemianopsia on the one hand, and by monoplegic distribution and Jacksonian epilepsy on the other, we have been long familiar, but it was to be hoped that we might add another factor of diagnostic value. Such cases, however, as that of Long⁹ seem conclusive on this point—the autopsy here revealed extensive softening of the posterior two-thirds of the internal capsule, but no sign of cortical disease. In this case touch, temperature, and pain senses were normal, but muscle and position senses were lost.

This case also serves as a reminder of the fact, to which further reference will be made, that the muscle sense fibres probably follow a separate course from those conveying cutaneous sensations. The curious fact that in Sailer's second case a deep lesion causing hemianopsia and pseudo-hysterical anesthesia on one side, was accompanied by the pure astereognostic type on the other, while hard to explain satisfactorily, certainly tends to show that cortical lesion is not essential to the latter form of anesthesia.

An interesting example of cerebral anesthesia resulting apparently from interruption of the bulbo-thalamic fibers recently came under our observation in the Neurological Department of the Massachusetts General Hospital, and will be elsewhere reported in detail by Dr. Paul.¹⁰

⁸*Semaine Médicale*, July 20, 1899.

⁹*Thèse de Long*, p. 246. cited by Verger.

¹⁰Notes from the Neurological Department of the Massachusetts General Hospital, *Boston Med. and Surg. Journal*. March 14, 1901.

Case I.—This patient, a woman 51 years of age, presented typical bilateral labio-lingual palsy, of ten years' duration, and of apoplectiform onset. The bulbar symptoms were accompanied by weakness and numbness of the left hand. She is unable to-day to recognize objects placed in this hand. There is very slight impairment of touch and pain sense extending up the arm, gradually disappearing after passing the shoulder. There is no loss of temperature, localizing, or posture sense, but slight impairment of space sense. Aside from the question of astereognosis this case presents a clinical picture of great interest, and, in fact, rarity; such cases are, however, mentioned by Gowers under the head of "Sudden (Apoplectiform) Bulbar Paralysis."

It seems fairly established that the ability to recognise objects held in the hand with the eyes closed, is a matter not of any one simple sensation, but a complex judgment, based on correlated memories of various forms of contact sense, spacing, localizing, pressure, together with the co-called muscle sense. With regard to the term muscle sense, the knowledge of the position of the members is imparted not only by stimuli from the muscles but also by cutaneous and articular stimuli; the former predominate when the parts are actively moved, the latter when they are at rest, but we can in neither case feel sure that we are only testing one, for even when at rest the muscles are in a state of tonus. It seems therefore advisable to use the term *posture sense* in referring to the patient's ability to recognise the direction in which the fingers, for example, are moved. In this way we merely record facts without misleading inferences. Pain and temperature senses are of little importance in this connection, and are apt to remain unaffected, except in matters of judgment, *e.g.*, in localizing the stimulus. The preservation, or comparative preservation, of touch sense is the key to the situation, for loss of this sense alone would of course entail loss of power to recognize objects.

It would seem that in certain physiological groups of fibers and cells are aggregated the associative memories concerning the sensations produced by the various qualities of objects, and to these groups we doubtless appeal for the re-

production of the ideas previously aroused by such sensations. Such processes rank high in the psychical scale, and must involve highly differentiated association fibers and cortical cell groups. It is apparently in cortical or subcortical disease that astereognosis is likely to prove of material diagnostic assistance, though it is not pathognomonic of this limitation.

In the second case we have to report, astereognosis was the initial, and for an appreciable period the only localizing symptom. This alone was deemed sufficient to justify a probable diagnosis of subcortical lesion, a diagnosis subsequently established by operation.

Case II. Nellie B.—This young woman presented herself at the clinic, Neurological Department of the Massachusetts General Hospital, Friday, November 17, 1900, complaining of numbness in the left arm and leg. The symptom had been of gradual onset, commencing in the leg about six weeks earlier, ushered in by temporary blur of vision and loss of power. The history included slight occipital headache, and occasional involuntary movement of the left hand, not amounting to spasm. There was a slight awkwardness in the left hand, but the separate motions were made perfectly and with good strength; the grasps were practically alike. The knee-jerk was exaggerated on the left. Ankle-clonus was present, but there was no Babinski reflex.

In other respects she was well, and doing her work as a compositor. It was found that when objects were placed in the left hand, she was unable to name them with closed eyes, for example, a knife, a coin, a pencil. On analysing the anesthesia only a slight degree of loss of touch sense appeared. The temperature and pain senses were preserved. Posture sense was lost; she could not tell with the eyes closed whether the fingers were raised, lowered, or separated. Examination was otherwise negative, including that of the fundus oculi. It was decided not to advise operation until the symptoms became more marked. Monday she returned, when Dr. Putnam examined her and agreed in the diagnosis.

The patient continued her work and was practically well up to Wednesday, when there was rapid onset of left hemiplegia, violent headache and vomiting. Dr. Hamilton attended the patient at her home, and Drs. Putnam and Lord were called to see her. Her condition steadily grew worse and

she was urged to enter the hospital for operation. She delayed until Friday morning, when her general condition had become alarming. At this time the Babinski reflex was present on the left. The operation was performed that day by Dr. Warren.

Operation. It was planned that the center of the flap should fall just posterior to the fissure of Rolando at the height of the motor centers of the arm.

With regard to the technique of operation, two trephine holes well separated were made in the right parietal region and connected by cutting forceps. The flap was completed by two converging lines made by the same instrument, and the narrowed base fractured and reflected with its covering of skin. The meningeal flap was laid back in the opposite direction as suggested by Keen. The surface of the brain revealed no abnormality by inspection or palpation beyond a moderate degree of tension. Introduction of the trocar at the point indicated and directed toward the median line gave vent, however, to about a testtubeful of clear fluid, examination of which was negative. The opening was enlarged and the cyst wall explored without sufficiently definite results to demand further operation. The dura was sutured and the bone and skin flap replaced, with drainage.

Uninterrupted improvement took place for three weeks, during which time only occasional moderate headache was complained of, and the paralysis was gradually lessening. Occasional tests showed loss of posture and space senses, impairment of pressure sense, moderate blunting of touch, with preservation of pain and temperature senses. At this time we confirmed the observation first made by Long in 1896, that when such a patient is told with the eyes closed to touch the affected hand with the other it is found impossible to do so except after groping. This indicates, of course, complete lack of posture sense in the affected part.

At the end of three weeks headache and vomiting recurred and grew steadily worse, the patient failed, and in one week died after a slight convulsion. Autopsy was refused.

This case presents astereognosis in its typical form. The following case falls in the same category, excepting that the loss of stereognostic sense was less in degree.

Case III.—J. W., a young woman, presented herself at the Neurological Department of the Massachusetts General Hospital, December 7, 1900, with the following history. She was well previous to November 1, when she noticed numbness

of the right hand while washing dishes. The numbness spread to the elbow and in a few days loss of power in the hand and whole arm followed. Several days later she lost power, and at the same time sensation, in the right leg. About this time her speech became affected. Moderate headache and vomiting appeared early in the history, but of late had subsided.

Physical examination showed spastic condition of the right leg with Babinski reflex but no clonus. The knee-jerk was exaggerated on both sides, but more marked on the right. Movements of the right hand were awkward. It seemed hard for the patient to find words but there was no decided aphasia. The fundus was normal. (Dr. Cheney).

Examination of the hand with reference to stereognostic sense gave the following results:—at the first trial the patient could not distinguish between a round and a square object, nor name a quarter dollar piece, a knife, a pencil, a piece of paper, or a key, but she recognised a bottle. At the second trial all of these objects were recognised, excepting the key.

Touch sense was found normal, the patient answering quite promptly each time she was touched. Pain and temperature senses were normal. Pressure sense, tested by variously weighted bottles of the same size, was lessened. Posture sense was moderately impaired, the patient at one time answering correctly as to the position of the fingers, her answers at another being incorrect. The localizing sense, normal in the palm, was lost in the finger tips, the patient being unable to state which finger was touched. Space sense was blunted; two points were named one until widely separated, after which all applications were named two, both when the points were closely approximated and when only one point was applied.

The patient was referred to the wards, entering the service of Dr. Fitz. While tumor was deemed the probable diagnosis, the rapid onset of symptoms together with the subsidence of vomiting and headache, and the absence of optic neuritis, prevented an absolute diagnosis. It was thought advisable to keep the patient under close observation so as to be prepared for operation whenever the diagnosis of tumor should be established, and, if possible, before alarming symptoms should supervene.

The condition remained practically unchanged until the last of the month when headache and vomiting recurred, double optic neuritis appeared, the paralysis extended to the face, and the general condition became worse. With the con-

current opinion of Drs. Fitz and Putnam, immediate operation was advised, and the patient was transferred to the surgical wards.

Operation was performed by Dr. H. H. A. Beach, January 1, 1901. A flap three by three inches over the Rolandic region of the left side was turned back including the skull with the skin, the former being opened by the rongeur forceps and cutters starting from a $\frac{3}{4}$ -inch trephine hole. The dura was opened revealing a dark, discolored area of the cortex the size of a half dollar, behind the fissure of Rolando. A small fragment of the cortex removed for examination was pronounced by Dr. Fitz malignant. It was deemed inadvisable to attempt removal. Another piece examined later by Dr. Wright was pronounced free of neoplasm. Introduction of a hollow needle was negative. The bone was removed from the flap to insure relief from pressure, and the skin was closed without drainage by interrupted silk-worm gut sutures. The post-operative condition was poor, the pulse 150. The condition improved on the second day. No change in the paralysis developed excepting that aphasia became marked, the patient being able to use only the words, "yes" and "middling." The aphasia improved from day to day through the first week, since which time it has remained stationary. When the aphasia was at its worst word-deafness and mind-blindness were marked, the patient understanding only the simplest orders and being unable to imitate even the simplest motions, as showing the teeth. A large cerebral hernia appeared at the seat of operation. The pressure symptoms disappeared. The sensory aphasia has prevented further examination of the stereognostic sense. No material change in her condition appeared up to the time of her discharge at the end of the month.

The extension of the post-operative symptoms in this case illustrates the danger, to which Mills has alluded, of drawing too definite conclusions from single cases of this nature.

The next case, first seen in December, 1900, and transferred to the wards, entering Dr. Shattuck's service, is of interest in that the paralysis was limited to the lower extremity, and furnished opportunity to demonstrate the analogue in the foot of astereognosis in the hand.

With a view to determining the normal degree of accuracy in the contact sense of the foot, we made a series of ob-

servation on healthy individuals. The result would indicate that in health we can do little more than determine whether the object touching the foot is sharp, blunt or long. In the persons tested, no reliability was to be placed on their discrimination between the touch of the finger, of the open end of a test tube, and of a quarter dollar piece. No difficulty was found, however, in distinguishing objects of this nature from a long object, as a pencil applied transversely to the sole. The latter test was found to suffice for practical purposes in the class of cases under consideration. It was found, for example, that a typical hemiplegic with marked astereognosis in the right hand found it impossible to distinguish between a quarter dollar piece and a pencil even when the latter was applied transversely to the sole of the paralysed foot. Localizing, space, and posture senses were found practically wanting in the foot of this patient, the first two being of course the only factors entering into the test.

Allusion has been already made to Long's test of the patient's inability to touch the astereognostic hand with the other unaided by vision. Trial of this capacity in the normal lower extremity showed that designated points upon one leg or foot could be located quite as accurately (and more conveniently) by the toe or heel of the other foot, as by the finger. This method is especially applicable to patients in bed.

Case IV.—Mrs. A. C., 27 years old, had a convulsion two years ago followed by paralysis of the left leg. This paralysis gradually became more marked with spastic symptoms; she had had repeated epileptiform attacks of Jacksonian type beginning in the great toe, recurring of late two or three times a week. After the attacks there was temporary weakness and awkwardness of the left arm. The face was unaffected. Headache and vomiting supervened in the past seven or eight weeks. There was double optic neuritis, the knee-jerks were increased, there was ankle-clonus on the left with Babinski reflex. No astereognosis existed in the hand.

The sensation was carefully tested in the paralysed foot, and it was found that though touch-sense was preserved, she was unable to distinguish between the quarter dollar piece and the pencil applied transversely to the left sole, though perfectly able to do so on the right. The temperature and

pain senses were practically normal, though certain tests tended to corroborate the statement that the judgment may be faulty though thermic stimuli are recognized, *e.g.*, though she readily told the difference between hot and cold test-tubes on the affected side, when the same tube was applied to both extremities she called it colder on one side than on the other. Posture sense was lost in the toes, spacing sense was wanting, two points being felt as one 6 c.m. apart, that is, separated the entire width of the foot. On the other foot these senses were preserved. The movements of the left foot were so ataxic that it was impossible for the patient to touch the finger of the examiner with her toe. She was unable to touch the toe or the heel of the left foot with the toe of the other foot without groping, whereas the knee was readily located.

Careful analysis of the loss of posture sense in this case, as in the others, shows that even in this sphere we have to do rather with loss of judgment than with loss of sense. This patient, *e.g.*, never failed to recognize the fact that the position of her toe was changed, though she was totally unable to state the direction of the change. We should be chary, however, of drawing conclusions as to the true muscle sense, for her recognition might be due to cutaneous or articular impressions.

Operation. On January 16, 1901, the patient was transferred to the surgical wards in the service of Dr. Warren, who operated January 22. Having in mind the center for the great toe (the initial point of attack in the convulsions) a point was chosen just posterior to the upper end of the fissure of Rolando as the center of the area to be exposed. A large flap of skin and bone was turned down. The section of bone was made by the cutting forceps with a three-quarter inch trephine hole near the median line as a starting point. The dura was tense and very thin. Before cutting the dura, the opening was enlarged by rongeur forceps in its upper and posterior portion. On exposure of the brain the region anterior to the fissure of Rolando appeared normal, whereas nearly the entire surface exposed behind the fissure was discolored, bulged excessively, was extremely vascular, and contained a hemorrhagic focus, from which an old clot was removed as large as the end of the thumb. On account of the character and indefinite boundaries of the diseased area nothing further was done beyond removing a portion of the cortex.

A bit of cortex was examined at the time by Dr. Wright

who found that the specimen submitted to him consisted of hemorrhagic cerebral tissue; he found no neoplasm, but stated that the condition was not inconsistent with tumor deeper in. A larger piece was examined later by Dr. Whitney, who reported as follows: "A mass of small, soft fragments, more or less reddish in color. Fresh examination showed the presence of nerve fibers and neuroglia. Microscopic examination of the hardened specimen showed small, dilated and thrombosed vessels with blood extravasated into the normal brain tissue. Nowhere in the specimen received was there any evidence of a new growth. Thrombosis of the small vessels and miliary foci of hemorrhage (red softening)."

The exact nature of the lesion cannot, therefore, be determined, but the history, together with the pathological finding strongly suggests a highly vascular neoplasm. The next day the motor paralysis had extended to the hand, which now showed marked astereognosis. Objects at once named in the right hand were unrecognised in the left. The patient's general condition precluded detailed analysis of the anesthesia. It was noted, however, that with eyes closed she could not find the left arm with the right hand.

On the third day (January 26) she had recovered some movement in the arm and a little in the fingers. She declared herself free from headache, and feeling better than she had for a long time. Examination at this time showed in the left hand loss of posture and space senses, with preservation of temperature sense and slight blunting of pain and touch senses. Objects placed in the left hand with the eyes closed were unrecognised. It was noted at this time that the patient not only failed to recognise the direction in which the parts were moved, but she did not even know they were moved at all; this was true not only of the fingers but of the wrist. Eleven days after operation convulsive movements appeared in the left arm and leg without loss of consciousness. Up to the date of her discharge, about a month after the operation, no further attacks appeared. At this time the paralysis was more marked in the arm than in the leg.

The result of operation in these three cases opens up the broad question of the advisability of surgical interference in cerebral disease. Without entering into a discussion of this phase of the subject, we still feel that in spite of continued disappointments, an occasional successful operation like that of Mills and Keen, renders it our duty in these desperate

cases to offer the patient the benefit of the chance when we have located the lesion at or near the cortex.

In approaching the subject of *astereognosis from a physiological point of view*, it would seem that there are certain factors the correlated memories of which enable us to determine the size and shape of objects. These factors have been analysed and catalogued in a manner somewhat arbitrary, perhaps, but sufficiently accurate for practical purposes. The different senses may be classified as (a) touch, (b) temperature, (c) pain, (d) posture, (e) localizing, (f) pressure, and (g) space. Astereognosis has been coincident in different cases with varying degrees of impairment of a varying number of these factors, and one case has been reported by Sailer and one by Burr tending to show that astereognosis may occur without loss of any other form of sensation.

It appears that in the typical case, certain forms of sensation play a major part, though perhaps the integrity of all is necessary for the very highest form of stereognosis. *A priori*, the most important senses would be those of spacing and localizing, which enable us to determine the size and shape of the surface or surfaces coming in contact with the skin; next in importance, posture sense tells the position of the fingers and their changes of movement in clasping and handling the object. Next would perhaps come the pressure sense through which the weight of the object is determined; of less importance, but still of aid, the temperature sense tells something of the material in certain cases; and of still less importance, pain sense indicates that the object possesses such extreme sharpness or excessive temperature as to produce discomfort. At the end of the scale comes touch sense, a sense possessing no special value in determining the size and shape of objects, though necessary for such determination.

It appears, on the whole, that the facts determined by the various observers of astereognosis substantiate this expectation.

It is, perhaps, not unreasonable to assume that the impressions of simple touch, pain, and temperature not only

have extensive cortical representation, but are also recorded for the simpler reflex purposes, though not consciously, in centers more deeply seated, principally in the thalamus. Whatever the exact localization of these centers, the mechanism concerned is already developed far below man in the animal scale. Such animals are capable of recognising the fact that they are touched, of knowing when they are hurt, and of distinguishing between heat and cold. That they possess to a certain degree the associative memories which take part in stereognosis is evident from the fact that they can localize their sensations, but that they possess the complicated mechanism required for the perfected stereognostic sense is highly improbable. Experiments upon animals will be, therefore, of little aid in this study.

Posture sense, which, as we have used the term, must include muscle sense, may be regarded as a specialization of what is known as common sensation, that is, the sensation which acquaints us with the condition and position of our bodies. But while common sensation is probably of extensive cortical as well as of deep representation and of low order, giving rise, for example, to the ordinary reflex processes of changing the posture and maintaining the equilibrium, still the accuracy of this sense possessed by man, represents a high degree of education, requiring judgment and training and justifying its classification with the localizing and spacing senses.

Bastian¹¹ in 1887 suggested the possibility that the fibers conducting muscle sense to the cortex follow a separate course, and end in a special region. This region he placed in the central convolutions, while adopting Ferrier's view of cutaneous sensation. Experimental researches are corroborative of this suggestion, and show, as indicated in the critical review of the subject by Barker,¹² (1) that fibers passing from the nuclei of the dorsal funiculi through the medial lemniscus convey muscle sense only, (Tschermak, von Bechter-

¹¹Brain, April, 1887.

¹²"The Nervous System and Its Constituent Neurones," Appleton, 1896, p. 697.

ew, Ferrier and Turner); and (2) that these fibers pass in large part to the central gyri, either directly, (Flechsig and Hoesel), or with interruption, chiefly in the thalamus, (Mahaim, von Monakow). It would not be surprising if further study should accentuate this differentiation, but with this branch of the subject we shall not here concern ourselves, though it will be referred to in the tentative suggestions we shall offer regarding the localization of the stereognostic sense.

The experiments of Sailer show that even in man the so-called muscle sense is less reliable than contact sense, a combination of tactile, pressure, and localization sensations. We have tried experiments similar to those of Sailer on normal individuals with practically the same result. Out of twenty individuals tested, only four easily and invariably distinguished by approximating the finger and thumb, the difference in diameter between a quarter dollar and a five cent piece; of these four, three were physicians with long practice in the use of delicate instruments (two aurists and one laryngologist), and one was a gentleman of unusual manual dexterity. The latter in fact, never failed to distinguish the cent piece from the nickel. This test is more accurate when the coins are replaced by pieces of cardboard of the same diameter, and when this precaution was taken the successful percentage was still further reduced. When we remember how readily the average individual can distinguish even the cent piece from the nicked in his pocket the inadequacy of the posture sense becomes evident. Not only in this direction but in others, the study of stereognosis furnishes constant surprises; it was found that the open end of a test tube was not always distinguished in health from a solid object of the same diameter applied to the palm of the hand. Control observations are particularly important in this branch of physical examination.

With regard to the localization of the areas concerned in *astereognosis*, Verger states that he knows of no case in which cerebral anesthesia existed without motor paralysis. This occurred, however, in the case of Mills and Keen, and was ad-

duced by the former to corroborate his view that the centers of sensation are distinct from those of motion. In the second and third cases reported in this paper a history was given which agrees with this experience, and in one of these cases we can confirm this history by own observation, for the astereognosis was fully established when the patient came to the clinic, and when no paralysis of motion existed. The rapid extension of symptoms, however, to include the motor functions in each of these cases forcibly suggests a close relationship in point of location between the motor centers and the highest areas subserving the stereognostic sense. The fact that with the extension of paralysis to the hand in the fourth case moderate blunting of other senses occurred might be explained either on the theory that other senses are also represented in the Rolandic region, or on the theory that the contiguous parietal lobe was involved by the injury. In these cases, however, as in the numerous cases on record with anesthesia resulting from lesion in the Rolandic area it appeared that the one *constant* disorder whenever tested, was that of the stereognostic sense. That the Rolandic region is not, however, the sole seat of sensation is obvious; the theory that the stereognostic sense has its principal seat in the central gyri does not conflict, therefore, with the localization of the centers receiving and analysing the various cutaneous sensations in the postero-parietal convolutions, precuneus and gyrus fornicatus, for which strong evidence exists. Such evidence is epitomized in the recent text-book of Mills, and has been treated in detail in other communications by this author. It seems a reasonable supposition, however, that the Rolandic region contains at least the areas representing the principal aggregation of cutaneous and muscular memories whose correlated action acquaints us with the various qualities of external objects.

In view of the diametrical opposition of the opinions held by Dana and Mills respectively, and of the strong evidence adduced on both sides of the question, the problem seems to be one of harmonizing the clinical and experimental evidence rather than of confirming one of these views, which involves

explaining away the evidence in favor of the other. We cannot accept the dictum of Dana that "it is hard to conceive of a sensory mechanism so complicated and clumsy as that required by a hypothesis of compound sensory centers, one in the limbic lobe and one in the motor cortex;" and if as he continues "no one has, I think, ventured to explain how such an anatomical arrangement could be put in harmony with the psychology of sensation," we are forced to find ourselves in the position of favoring some such complicated arrangement and of being sufficiently venturesome to hint at such explanation. It seems to us quite as logical to decide that these processes are complicated as to assume that they are simple.

In advocating his view of a sensory-motor memory organ in the Rolandic region, Dana has indicated an analogy between this area and Broca's convolution. If the clue furnished by this comparison is pursued to its ultimate conclusion, a theory is suggested which seems to reconcile the various apparently conflicting observations. It should be remembered in this connection that we need not hamper ourselves by an assumption that the orders of cerebral sensory neurones are limited in number.

Suppose we take for a working model the fairly established physiology of speech, we find the sensory side of this mechanism divided into several steps, each of which implies an interruption of the cortical sensory fibers with the interposition of a fresh neurone. If we consider, for example, the *visual* aspect of speech we find (1) a center for vision, sending fibers to (2) a center for so-called mind vision which in turn sends fibers not only in other directions but to (3) the assembling center in Broca's convolution known as that for the kinesthetic speech memories. From this center pass, finally, the stimuli calling into action the motor mechanism concerned in speech.

Turning now to the cutaneous sensory memories whose correlation plays so important a part in stimulating ordinary so-called voluntary movements, why may we not have similarly (1) the cortical structures receiving impressions of sim-

ple touch, temperature and pain, occupying mainly, or solely, as the case may be, the sensory regions of Ferrier, of Horsley and Schaefer and of Mills, let us assume (for diagrammatic purposes merely) the parietal lobe for the upper extremity, the gyrus fornicatus for the lower; higher in scale and perhaps more anteriorly, may be placed (2) the mechanisms, whose action represents the associative memories resulting in the appreciation of the character of the object felt; and finally why may there not exist (3) centers assembling the stimuli from the various groups of the second order and also from other sources to serve as the kinesthetic centers stimulating ordinary voluntary movements. In these centers the stereognostic sense should reach its highest development, and here should the mental image be formed which doubtless precedes every such movement, and which reproduces the memories of such sensations as will accompany the movement.

These centers would logically be placed most anteriorly, or nearest to those of so-called voluntary motion. The fact that the weight of evidence indicates that the fibers carrying muscle sense follow a separate course and terminate in the post-central gyrus seems to harmonize as well with this as with any theory advanced. Why may not the muscle sense fibers be conducted to the assembling centers by more direct paths than those of cutaneous sensations to play their part in the stereognostic function?

If some such scheme as we have outlined should be deemed reasonable, it would be easy to understand how lesions in the postero-parietal convolutions might also produce astereognosis through destruction of the centers of the second order or of the fibers passing from them, just as lesions impairing the condition of visual and auditory memories cause sensory aphasia?

Some such division of the cortical sensory areas would not only offer a logically reasonable compromise between the views of Dana and Mills, but it would follow an analogue already accepted, and seems on the whole fairly adaptable to the conflicting clinical reports submitted by the various stu-

dents of this subject. Whatever view is adapted it is necessary to assume in capsular lesions with astereognosis, that though the touch sense is preserved, the fibers conveying cutaneous stimuli must be sufficiently impaired to preclude the perfect passage of *all* the impressions made on the skin by the object handled. This would obviously impair the sensory picture which must be analysed by the cortical centers, and thus interfere with the localizing, spacing, and posture senses? In attempting to analyze such cases it must be remembered that the classification adopted is arbitrary, convenient for practical examination and record, but not answering all physiological requirements.

To forestall the criticism that such a conception would too far simplify the processes of thought and action, it should be remembered that we have only sketched the possible course for one set out of the innumerable sets of fibers concerned. It is obvious that if such an assembling center exists, for example in the hand area of the post-central gyrus, it must be in connection with the speech memory centers, in order that the object may be named as well as recognised; again, the visual and auditory memories must have a representation here, and still further, the aggregation of sensory memory cells representing the hand must be connected, not only with the motor center for the hand, but also with those of other parts, for the exercise of the stereognostic sense in the hand may call out a movement elsewhere than in this extremity.

We have neither the training nor the desire to enter the domain of psychology, nor to localize the consciousness, which Loeb¹⁸ defines as "a term for the phenomena determined by the mechanisms of association memories," a definition implying diffusion, not limitation. But notwithstanding this author's opposition to the theory of localization, clinical experiences supported by pathological reports seem to have established the fact that destruction of certain areas impair the mental processes in certain spheres. If this be true

¹⁸"Comparative Physiology of the Brain, and Comparative Psychology," G. P. Putnam's Sons, N. Y., 1900.

it seems not altogether unreasonable to suggest that possibly the association memories most intimately concerned in recognizing the feel of objects, have their principal seats in certain localities, the destruction of which will therefore especially impair the general mechanism of consciousness when brought to bear upon this particular function.

An interesting case seen by one of the writers, (Dr. Walton), in consultation with Dr. C. M. Whitney, is suggestive in this connection.

Case V.—Mrs. B., 92 years of age, developed, about February 1, choreiform movements in the left arm, gradually spreading to the leg and face on the same side. At the time of consultation, twelve days later, movements were violent in the arm, moderate in the leg and marked in the face. The strength was not materially impaired in the affected members; the grasps were good; all voluntary movements were made, though in the inco-ordinate manner characteristic of chorea, especially marked in the arm. The temperature was 100, the pulse 160; the mind was clear. In the hand moderate astereognosis existed, though the touch was promptly felt. A bottle was called a purse, a fifty cent piece was called a copper, a square check was called round, but a knife was recognised promptly. Difficulty was experienced in comparing the sensation with that of the other hand, as that member was crippled by rheumatism; there was a difference, however, in favor of the right hand, as she here called the half dollar a "silver piece." In testing the sensation of the feet there was no bar to accurate comparison. The pencil applied transversely to the sole of the right foot was promptly recognized as a long object, but when it was applied to the left sole, the patient was unable to say whether she was touched by a point or a long object. Posture sense was lost in the toes on the left, space sense was markedly impaired, and localizing sense was extremely defective, the patient not once naming the toe touched, though she did this promptly on the right excepting once when she corrected herself directly. Touch, pain and temperature senses were preserved on the left as on the right. The choreiform movements were gradually replaced by a paretic condition, coma ensued, and death occurred six days later. There was no autopsy.

In this case the central convolutions were manifestly implicated by a lesion irritating but not destroying the motor area. While this case, like most of these adduced to support

one or the other view regarding the cerebral localization of sensation, is susceptible of various interpretations, it requires no stretch of imagination to attribute the astereognosis to injury of the Rolandic area. The case is notable also as offering further illustration of astereognosis unaccompanied by motor paralysis.

It is significant that astereognosis has been present in every case of Rolandic disease coming under our observation since commencing this study. (Cases, 2, 3, 4, and 5.) It is true, as Mills¹⁴ has stated, that "innumerable cases have been reported of lesions of the motor cortex without the slightest impairment of sensibility," and this is one of the strongest arguments adduced against this region as the center for cutaneous sensation, but it is pertinent to enquire *whether the stereognostic sense was tested in these cases*. A certain number of cases of purely motor paralysis resulting from Rolandic lesion would not be incompatible with the view above outlined if the motor and stereognostic centers are distinct, but *innumerable* cases of this variety would certainly constitute a weighty argument against it. As an illustration of the variety of reports which should be excluded on account of failure to test the stereognostic sense we need only mention the recent, otherwise valuable, contribution of Hoppe.¹⁵ Of the seven operations for brain tumor and cyst reported by this writer, four were performed upon lesions in the Rolandic region. In each of these four cases the sensation is reported normal, though three of the patients had complained of numbness. In only one of these cases, however, is mention made of the varieties of sensation tested, and in this one the report is limited to the senses of touch, pain and temperature.

In view of recent knowledge one is struck by the justice of Bastian's comment on *the difficulty in drawing conclusions regarding sensory judgments from experiments on animals*. We should certainly be chary of accepting Schaefer's¹⁶ dictum that a single negative experiment on the brain

¹⁴"The Nervous System and Its Diseases." Lippencott, 1898, p. 341.

¹⁵Journal American Medical Association, February 2, 1901.

¹⁶Brain.

of an animal eliminates the Rolandic region as a sensitive area, especially when he states that temporary sensory disturbance has sometimes appeared after subcortical section in this region, and that the animal does fail to remove the clip from the paralyzed limb after such operation. The latter phenomenon he explains by the absence of muscular twitching, and whatever sensory disturbance appears he attributes to edema or other local cause for the blunting of sensibility. If such hypotheses as these are accepted on the one hand, why not assume on the other that the failure to remove the clip represents something analogous to astereognosis?

Even in the examination of hemiplegia resulting from infantile cerebral paralysis we are handicapped by the fact that many individuals suffering from congenital or infantile disease, have failed, through lack of use, to acquire the training essential to the development of the stereognostic sense.

This point has been well brought out by Claparède¹⁷ who reports the case of such a child with apparent astereognosis, who acquired the sense in the paralyzed hand after comparatively brief training.

In fact, we shall have to rely principally upon careful clinical observation of intelligent adult patients, and from such observations the facts doubtless will be gradually accumulated that shall place this localization on a par with that of speech and vision.

With regard to *the bearing of these observations on the seat of the lesion in hemiplegia*, while we are not in position to lay down final rules, it would seem that there are certain general indications which may help to guide us. In the first place, given a case of hemiplegia without astereognosis or other sensory disorder, the chances are perhaps in favor of capsular disease, though the supposition of separate centers would render theoretically possible purely motor paralysis from cortical disease in the Rolandic area. In point of fact, recent investigations indicate that purely motor hemiplegia is not so common as was formerly supposed, and that a large propor-

¹⁷Claparède—*Journal de Physiologie et de Pathologie Générale*, September, 1899.

tion of hemiplegics suffer from astereognosis (Verger found more than one-half in recent cases, Abba found 8% in fifty old and recent cases, Dercum found nearly half in forty-one cases).

We have only had opportunity to study two (both probably capsular) fresh cases of hemiplegia since commencing this investigation, and of these two neither showed astereognosis. We have had opportunity, however, largely through the courtesy of Drs. Nichols and Howland, at the State Hospital, of Drs. Taylor and Lord at the Long Island Hospital, and of Drs. Lane and Noyes at the Boston Lunatic Asylum, to examine fifty-two old cases (varying in duration from two months to thirty years). Thirty-seven presented no trace of astereognosis or other form of anesthesia, but fifteen were unable to name objects and had lost space and posture, but preserved pain, touch and temperature senses. In several other cases the results were uncertain on account of aphasia or dementia. It has been claimed and is doubtless sometimes true that a long standing contracture with complete loss of motion in the fingers would prevent, from mechanical reasons, the recognition of objects;¹⁸ this objection was guarded against by testing the posture, localizing and the spacing senses.

In point of fact, a number of cases with long standing contracture and immobility, in our cases, as in those of Dercum, answered promptly and correctly.

While the number of old hemiplegics so far examined is too few for statistical accuracy, our results, combined with the observations of others, would indicate that *a large percentage, perhaps a third or more of hemiplegics show lasting astereognosis*. The distribution of the paralysis in most of our

¹⁸It is interesting to note in this connection that Mills thus explains the apparent astereognosis in the case of Lloyd and Deaver. In this case Rolandic injury caused motor paralysis and inability to recognize objects in the hand, though touch, pain and temperature senses were normal. Test of the localizing, spacing and posture senses would have proved useful. In case the astereognosis resulted from sensory, not motor loss, the case would strongly suggest the central gyri for the seat of the stereognostic, but not for the cutaneous sensations. Single cases are only suggestive, however, never conclusive in this study.

cases indicated capsular lesion, and it can be fairly assumed either that in such lesions involvement of the posterior limb is common, or that the sensory and motor fibers have no sharp dividing line, but are more or less mingled. The latter is the explanation offered by Dejerine.

In case of complete hemianesthesia involving the trunk the condition is apt to be one of hysteria either existing alone or superimposed on an organic lesion.

In case the so-called pseudo-hysterical form of anesthesia is present, that is, incomplete anesthesia of distal distribution and indefinite boundaries but including profound loss of touch, pain, and temperature senses, while we cannot always eliminate hysteria, we generally have to do with posterior capsular or thalamic lesion. This diagnosis will often be corroborated by the presence of hemianopsia. The studies of Verger, and those of Dejerine and Long would indicate that in the organic cases persistence of this form of anesthesia implies extensive involvement of the outer nucleus of the thalamus, the bulbo-thalamic, or the thalamo-cortical fibers.

Finally in such cases as those reported here, in which the astereognostic type of anesthesia is the initial or prominent symptom, we must remain in doubt whether the sensory fibres of the internal capsule or the cortical areas are primarily or solely involved, unless a monoplegic distribution, attacks of Jacksonian epilepsy, or other diagnostic features are added to the clinical picture.

The practical advantage of localising this function lies in its aid in selecting the seat of operation in case of suspected tumor, or other lesion susceptible of relief by surgical measures. In the light of practical results as well as of theoretical considerations it seems a safe working plan in operable cases with no other localizing symptom than astereognosis, to select for the center of the area to be exposed, a point in the ascending convolution at a height corresponding to the motor representation of the extremity involved. Such cases will doubtless be few in number compared to those of hemi- or mono-plegia in which astereognosis, added to the clinical picture, serves merely as a corroborative focal symptom.

THE BABINSKI REFLEX.¹

By C. VAN EPPS, M.D.

I owe the opportunity to make the following study to my chiefs at the Philadelphia Hospital, Drs. Mills, Dercum, Lloyd and Burr, and to the chief resident physician, Dr. Daniel E. Hughes. The purpose of my investigation was to determine the conditions in which the Babinski reflex is present. The data consisted of one thousand persons classified as follows:—

Babies and children	100
Patients in medical wards presenting no nervous symptoms	165
Insane patients presenting no organic cerebro-spinal disease	335
Patients suffering from nervous disease but presenting no symptoms of involvement of the lateral tracts	213
Hemiplegics and diplegics	125
Patients having disease of the spinal cord with manifest involvement of the lateral tracts.	62

In health on stroking the sole there follows flexion of the toes with or without movement of the ankle and leg. This reflex is not present in every one, some normal persons having no plantar reflex at all.

Babinski discovered that in certain diseases the plantar reflex is altered and claimed that this alteration is constantly present whenever there is "perturbation" of the lateral tracts. He described the alteration as follows: There is extension of the great toe with or without extension and separation of the other toes, the movement being slower than the normal reflex and more readily produced by stroking the outer than the inner side of the sole.

In testing for the reflex I used, as a rule, an ordinary blunt tooth-pick; if the sole was very sensitive I used my

¹Read before the Philadelphia Neurological Society, October 22, 1900.

finger tips, and if very strong irritation was necessary, I used the blunt point of a small metal bar. Usually extension when present was best produced by stroking the outer side of the sole in a forward direction. Less often transverse stroking of the sole was more efficient. When flexion was present, stroking the inner side of the sole usually produced the best reflex.

I have found that there is a great variation in the number of toes which extend, and that sometimes there is flexion of some of the smaller toes and extension of the others, including always the big toe, which is never flexed. For example, in sixty-eight hemiplegics the following manifestations of the Babinski reflex were found:—

Extension of all the the toes, big toe most . . . 50%.
 Extension of the big toe, small toes flexed. . . 27%.
 Extension of big toe, no motion small toes. . 22%.
 Extension of small toes only. 1%.
 Extension of all toes, small toes most. 0%.

THE NORMAL PLANTAR REFLEX IN ADULTS.

To determine the normal plantar reflex I examined five hundred patients from the General Hospital and the Insane Department. None of these patients had any symptoms of organic cerebro-spinal disease. In this group I found the plantar reflex absent on both sides 19 cases, or only 3.8 per cent., and absent in one side only in 11 cases, or 2.2 per cent. These figures are much smaller than those of most investigators, many reporting an absence of motion in both feet in 10 per cent. and in one foot only in 15 per cent. On the other hand Collier³ states, "It is doubtful whether the plantar reflex is ever constantly and completely absent in healthy subjects." This may be explained by the fact that he has considered as a part of the normal plantar reflex contraction of the thigh muscles, especially the tensor-vaginae-femoris. Considered thus I found complete and constant absence of all reflex motion in only one case or in one-fifth of one per cent.

³Brain, Spring, 1899.

In one case there was constant extension of all the toes in one foot; in five cases irregular flexion and extension occurred in all the toes of one or both feet; or in all extension in some form was present in seven cases, or $\frac{1}{4}$ per cent., and in only one case was a typical Babinski reflex found in both feet. The history of this case I now give in detail:

G. E., male, German, laborer, married, entered hospital 9, 6, 1900, complaining of cough and abdominal pain. No history of syphilis, typical history of phthisis for three years past; tubercle bacilli were found and patient was sent to phthisis ward where malarial paroxysms developed.

Examination showed a fairly well nourished muscular German of about 45 years; memory and speech fair; the pupils were equal 2.5 mm., reacted well to light, in accommodation and convergence; there was no extra-ocular defect; the vision of each eye was normal; the ophthalmoscopic examination was negative. The tongue was straight, dry, gray coated and showed no tremor; the pulse was normal; the heart showed no gross lesion; the lungs showed cavity at the right apex and involvement of the left apex; the abdomen was slightly tense and tender; the spine was straight, with no prominences, or tenderness. The extremities were muscular and the gross strength was normal; there were no tremors or ataxia; the station and gait were good, and sensation was normal. Reflexes: there was no jaw-jerk, the biceps-jerks and knee-jerks were equal and quick; there was no ankle or patellar clonus. Stroking the right sole caused active extension of all the toes, especially the big toe, while stroking the left sole caused active extension of the big toe with indefinite extension and flexion of the smaller toes. With the exception of two tests made during the height of the second febrile paroxysm in which the toes were usually flexed, the patient has always shown a typical Babinski reflex in both feet. During other febrile paroxysms extension was continually present, proving that the temperature and the slight delirium present each time bore no relation to the form of plantar reflex. Over a one and one-half hour period with a temperature of 95.8 degrees, marked jaw-jerk, spinal epilepsy, spastic knee-jerks, ankle and patellar clonus were present.

In this case the complete absence of history and physical signs of organic nervous lesion make us consider whether the typical Babinski reflex may not occur with a normal spinal

cord. Dr. Burr tells me that he has rarely found constantly present ankle-clonus and exaggerated knee-jerk in phthisis without other signs of cord diseases. These two symptoms have been practically absent in this case, therefore we have to do either with a case in which there is present some tubercular process involving directly or indirectly the spinal cord, and in which there is no other clinical evidence of such a process than the Babinski reflex, or else with an anatomically normal spinal cord showing an anomalous plantar reflex.

THE NORMAL PLANTAR REFLEX IN CHILDREN.

It is difficult to determine what constitutes the plantar reflex in children under one year old because, without any external stimulus, their toes and feet are almost always in movement. I have examined the same babies on different days, usually with contrary results, and I have observed the same fact in comparing my notes with those of Dr. Burr in cases examined by him the same day. One baby two weeks old, examined while asleep, showed a typical extension of all the toes as found in the adult. Another baby, also asleep, showed usually typical adult extension. The following percentages are those obtained from tests on fifty babies under one year old:—

Extension usually of all toes.....	50%.
Flexion, usually of all toes.....	20%.
Irregular flexion and extension.....	20%.
Feet held too stiffly to obtain reflex.....	8%.
Absence of motion.....	2%.

In fifty healthy children between one and twelve years of age,, typical extension was never found constantly present; in two cases, one of sixteen months and the other two years, extension usually occurred in both feet. In four cases, two of eighteen months, one of two years, and one six years, there was irregular flexion and extension. With the exception of this last case neither typical nor irregular extension was observed in children over two years old examined while awake. One child of six years, who when awake had active flexion of

all the toes in both feet, when asleep showed constant moderate extension of the small toes and doubtful extension of the big toes in response to irritation of the sole or any part of the leg or thigh. In three other children flexion was equally or more pronounced during sleep.

NERVOUS DISEASES WITH NO MANIFEST DISORDER OF
PYRAMIDAL TRACTS.

Of the 213 cases of disease of the nervous system with no demonstrable lesions of the pyramidal tract and under which are included tabes dorsalis, Friedreich's ataxia, paralysis agitans, progressive muscular atrophy, multiple neuritis, epilepsy, imbecility, primary neuritic atrophy, chronic chorea, hydrocephalus, monoplegia, cerebral tumors, cerebellar tumor, brachial neuritis, lead palsy, post-diphtheritic paralysis, neurasthenia, senility, uremia, Raynaud's disease, cerebro-spinal syphilis, cerebral syphilis, toxic ataxias, exophthalmic goiter, and hysteria, flexion was present in 167 cases, or 78 per cent. In 38 cases or 18% there was no motion. In 5 cases there was constant extension in both feet; in one constant extension in one foot and in two irregular flexion and extension in both feet. Of the five cases with constant extension, four were tabetic and one neurasthenic with the following histories:—

Case I.—Tabes, W. B., 49 years old, moulder, white, admitted to nervous wards 12, 6, '98, complaining of weakness in legs. He gave a history of constant pain in head with increasing deafness for ten years past. Four years ago he developed pain and dragging of left leg and shortly afterwards of the right leg. Three years before he suffered from a transient diplopia and afterwards from girdle pains, acute retention of urine and obstinate constipation. Entrance examination showed a white male, very deaf, with Argyll-Robertson pupils, ataxia of arms, station and gait; absence of knee-jerks and plantar reflex, and normal sensation. Since then there is a record of repeated attacks of acute retention of urine, of trophic ulcers on feet, and of increasing ataxia. Upon my examination of him in February, 1900, he complained of constant pain in the head. He was very deaf, apparently demented, almost helpless from ataxia. Argyll-Robertson pupils were

present, and the knee-jerks were absent. On the right side, stroking the sole produced constant weak extension of all the toes, on the left, stroking the sole caused irregular flexion and extension of all the toes. Six weeks later extension was constant in the first, second and third toes of both feet. The patient now failed more rapidly mentally and physically, and for two weeks before death had marked extension of all toes in both feet.

Case II.—Tabes, W. S., 21 years old, male, white, admitted to nervous wards, 6, 8, '98, complaining of pains in head and of "nervous spells." No venereal history. Could not walk until three years old and his legs were always weak. One year ago he began to notice failing vision and shooting pains in legs. Entrance examination showed a moderately well nourished white man about 21 years old; facial expression dull. Eyes: pupils large, unequal, no light reaction, feeble response in accommodation, slight nystagmus on fixation, extra-ocular motion fair, simple atrophy of both optic nerves. The tongue was flat, flabby and slightly tremulous. The knee-jerks were absent on both sides, and there was no ankle-clonus; moderate ataxia of station and gait; sensation delayed to touch and pain tests over arms and legs. After repeated attacks of laryngeal crises, and on account of dementia, he was transferred to the insane department. Examination February, 1900, showed patient, blind, bed-ridden, demented, Argyll-Robertson pupils, knee-jerks absent. On stroking the soles, active extension of all the toes, most marked in the big toes, was produced in both feet.

Case III.—Tabes, L. S., male, white, 62 years old, admitted to nervous ward 5, 23, '96. Two years before admission developed shooting pains in legs and bad feeling around the waist, and later vertigo. Entrance examination revealed a very deaf, poorly nourished German of about 65 years, with Argyll-Robertson pupils, absent knee-jerks, ataxia of arms, station and gait, and some hyperesthesia of legs. On examination 9, 24, 1900, patient complained of pain in legs and attacks of vomiting. He was very deaf, and apparently demented; speech was feeble, slow and indistinct; Argyll-Robertson pupils were present; there was moderate ataxia of arms, station and gait; the biceps-jerks were active, and the knee-jerks were absent; plantar irritation on the right side caused active but limited extension of big toes with no motion in small toes. On the left there was marked extension of the big toe with indefinite flexion of small toes.

Case IV.—Tabes, M. F., 55 years old, male, white, ad-

mitted to nervous ward, 11, 11, '98, complaining of pain in left side and back. He has since shown constantly moderate ataxia of arms, station and gait, Argyll-Robertson pupils, absent knee-jerk, and has complained much of pain in left side and shooting pains in legs. Recent examination showed a fair mental condition, slight tremor of the tongue and hands and repeated tests have shown extension of the big toes with no motion of the small toes in both feet.

In the cases of tabes examined by Babinski, van Gehuchten and Collier the extensor response was never met with. Babinski³ reports a case of tabes combined with paresis in which there was typical extension in both feet. Three combined tabes paresis cases in my own series showed no plantar reflex. Three of the tabes cases above mentioned in detail were undoubtedly with dementia, yet this fact alone does not seem a sufficient explanation for the presence of the Babinski phenomenon, because in 72 cases of dementia and 28 cases of paresis the extensor phenomenon was never present.

Case V.—Neurasthenia, O. N., male, white, 62 years old, admitted to nervous wards 12, 14, '99, complaining of general weakness. Examination showed memory, speech, eyes, station, gait and gross strength normal; the knee-jerks were weak. Plantar irritation caused active extension and separation of the small toes on the right; on the left there was moderate extension of the large toe and indefinite extension of the small toes. Repeated and recent examinations confirm the above statement.

Case VI.—Multiple alcoholic neuritis, O. L., male, white, 43 years old; examination showed eyes normal, limbs much emaciated, marked diminution of pain and thermal sense over limbs and anterior part of the body, knee-jerks absent. On the right, stroking the sole caused good plantar flexion; on the left, there was usually slight extension of all the toes, never flexion.

In 85 epileptic cases flexion was present in 83. In two there was no motion. In a number of examinations made during and after a convulsion, but while coma was present, flexion was present in all as soon as the spasm had relaxed, except in the following case:—

W. W., male, white, 64 years old; history of twelve epi-

³La Semaine Médicale, July 27, 1898.

leptoid convulsions during past four years. Examination showed feeble-minded, passive, well-nourished male of about 65 years; gross strength normal, reflexes active throughout; station, gait, sensation fair. Plantar irritation caused fair flexion of all the toes on both feet; no symptoms of cerebral tumor. The patient was found unconscious with stertorous breathing by the nurse; ten minutes later, when I saw him, he was still unconscious, the head was retracted, the limbs were rather stiff, the biceps- and knee-jerks were active, no ankle or patellar clonus. Plantar irritation caused active extension of the big toes with no motion in small toes on either side. Seven minutes later he developed flexion of all the toes of right foot, and twenty-five minutes later, absence of motion or indefinite flexion in the left foot. The knee-jerks were slightly increased during the attack. The following day plantar irritation caused good flexion of all toes on both feet. Dr. H. O. Shiffert, a Blockley colleague tells me that in one patient during an uremic convulsion he obtained typical extension of all the toes on both feet. Later I examined the same patient while in a state of coma and found normal flexion in both feet. I have examined seven uremic cases in the state of coma. In six flexion was present and in one there was no plantar reflex.

HEMIPLEGICS AND DIPLEGICS.

In 118 hemiplegics, extension was present on the paralyzed side in 57 per cent.; flexion of all the toes in 26 per cent.; flexion only of the small toes, 4 per cent.; irregular flexion and extension, 5 per cent.; no motion, 8 per cent. On the opposite side extension was present in 9 per cent.; flexion of all the toes in 72 per cent.; flexion of the small toes, no motion in the big toes, in 4 per cent.; irregular flexion and extension in five per cent.; no motion in 10 per cent.

The duration of the hemiplegia varied from six hours to thirty-nine years, and, apparently, bore no direct relation to the time of appearance or the form of the Babinski reflex.

Case I.—L. B., male, black, 45 years old, history of complete hemiplegia of six hours' duration. On admission there was spastic knee-jerk and absence of plantar reflex on paralyzed side. These conditions remained the same until six weeks later. Fourteen weeks later I again saw the patient, and at that time the knee-jerk was weak, and stroking the sole caused moderate, slow extension of all the toes on the paralyzed side.

Case II.—M. S., white, female, 43 years old; two weeks before admission developed partial paralysis of right face. Twelve hours before admission, patient was found unconscious with stertorous breathing, difficult deglutition, and loss of power in right arm with temperature, pulse and respiration respectively of 102, 80 and 32. Admission examination showed a well-nourished white woman, unable to talk but conscious of all that was said; there was some drooping of right face; the eyes showed no deviation, paresis, ataxia, or nystagmus; right hemianopsia was probably present; the tongue was moist, clean, and lay motionless in the floor of mouth; the pulse was 72, full and regular; the heart sounds were obscured by noise of breathing; the lungs were resonant; the breathing was vesicular accompanied by large, moist râles; the abdomen showed nothing abnormal. The extremities were rather rigid, especially the right arm in which no motion, except slight flexion of fingers, was possible; the other limbs were well moved. The reflexes were all spastic; there was patellar clonus on both sides; the ankles were stiffened by old joint lesions and showed no clonus. There was normal plantar flexion in both feet. Sensation was normal; there was urinary and fecal incontinence. Thirty-six hours after stroke the reflexes were no longer spastic, though large; and there was no clonus. Plantar irritation caused the extension of all the toes on the right and flexion of all the toes on the left. Forty-eight hours after the stroke the right leg was flaccid and powerless; the knee-jerks were absent, extension persisted on the right and flexion on the left. Sixty-seven hours after the stroke the knee-jerks were still absent, extension was present in both feet, more marked in right. Until death, which occurred four days later, the knee-jerks remained absent, extension of all the toes persisted in both feet, and the paralysis remained limited to the right side of body, limbs and face. The urinary examinations were always negative. Post-mortem revealed: Marked congestion of cerebral meninges, unusual amount of clear fluid in the ventricles, small area of softening the size of a hickory nut in the right optic thalamus; kidneys show no gross lesion.

Case III.—M. J., female, white, 62 years old, always healthy. The day before admission suddenly developed double vision and a sense of nausea. Entered hospital with incomplete external and internal ophthalmoplegia. The gait and station were poor, the patient falling always toward the left if not supported; there were marked jaw-jerk, biceps-jerk, and knee-jerk. Plantar irritation caused extension of

all toes on both feet. Three weeks later complete right hemiplegia developed, but caused no change in the reflexes described above when the patient was examined five days later. In seven diplegics, extension was present in both feet in three cases, irregular flexion in three cases, and weak flexion in one.

THE PLANTAR REFLEX IN SPINAL CORD DISEASE WITH LATERAL TRACT INVOLVEMENT.

In this series are cases of spinal syphilis, cerebral-spinal syphilis, myelitis, compression myelitis, traumatic myelitis, syringomyelia, multiple sclerosis, amyotrophic lateral sclerosis, diffuse spinal sclerosis, ataxic paraplegia, spastic paraplegia, spastic monoplegia, meningo-myelitis, and infantile paraplegia.

In the 62 cases of this class, extension was present in 63 per cent.; flexion in 26 per cent.; no motion in 11 per cent.

The following is a case, physiologically at least, of total transverse lesion of the spinal cord.

M. M., 45 years old, female, white, was admitted complaining of loss of power in legs. Six months ago was operated on for carcinoma of the breast of eighteen months' duration; noted return of nodules in scar two weeks ago. Ten days before entrance she developed paresthesia, shooting pains, some loss of sensation and weakness in legs; three days before admission she developed complete paraplegia and loss of sensation in the legs, with incontinence of urine and feces. Examination showed moderately emaciated white female of about 50 years of age; the eyes were normal, and the heart, lung and abdomen showed no gross lesion. There was a small hard nodule in the cicatrix of excision of left breast, and a few hard bodies could be felt in left axilla; there was some prominence of the seventh, eighth and ninth dorsal vertebrae. The extremities were much emaciated; the reflexes of the arms were active; the legs were completely paralytic, and there was complete loss of sensation over legs and on body up to one inch above umbilicus; the knee-jerks were absent; the sphincters were completely incontinent. Stroking the soles, or irritation of any part of the legs, produced usually, quick flexion of legs and thighs, associated with dorsal flexion of the ankles and irregular extension of the big toes, more marked on the left.

I wish to thank Dr. Charles W. Burr for his personal aid and encouragement in the preparation of this paper.

NEW YORK NEUROLOGICAL SOCIETY.

January 1, 1901.

The President, Dr. Frederick Peterson, in the chair.

SPINAL ACCESSORY PARALYSIS.

Dr. Pearce Bailey presented a man who last March had been operated upon for suppurating glands of the neck. During the operation the spinal accessory nerve had been cut. There had been immediate and complete paralysis of the sterno-mastoid and trapezius. About six weeks later the nerve had been sutured, with considerable improvement in the symptoms. During the past summer weakness had appeared in the deltoid and in the muscles supplied by the musculospiral nerve. There had been considerable return of power. A fairly large incision had been made at the operation in the region of the mastoid. On inspection, the shoulder on the affected side was seen to droop, and the scapula hung away from the spine. The only anesthesia observed had been limited to the ear and the right side of the face—an area corresponding to the supply of the great auricular nerve, which had undoubtedly been cut at the same time. There was now marked hyperesthesia over the distribution of this nerve. When first seen the position of the head had been slightly towards the injured side and a little downward.

Dr. E. D. Fisher suggested that there was a psychical element in the case. On pressing along the muscles of the arm slowly there was no reaction, but if this pressure were exerted suddenly there was a spasmodic contraction of the muscles of this region.

Dr. Joseph Collins did not think the whole condition had been explained by Dr. Bailey, for, in his opinion, there were symptoms of root involvement over a rather extended area. He could not understand how these could be explained by a mere section of the spinal accessory nerve. The tic of the facial muscles and on either side of the neck, and the narrowing of the palpebral fissure appeared to be associated with fibrillary twitchings. This would indicate a rather extensive involvement of the anterior roots in the cervical region. He would also like to know about the condition of the pupils.

Dr. F. Peterson said that he had seen this case before, and had been interested in the complications. He had seen the man before the appearance of the twitchings, and on first observing the latter he had been inclined to assume that the case was hysterical. However, after having made the electrical examination he had felt sure that it was not hysterical, but one of pressure palsy involving a number of nerves, possibly as a result of sleeping with the arm in an upward position.

Dr. Bailey said that the suppurating gland had been situated deeply underneath the sterno-mastoid. When the patient was first seen by him last April there was a typical picture of paralysis of the sterno-mastoid and trapezius, but no symptoms referable to the arm, no tics and no functional disorders. The man had been completely

incapacitated for work, and this probably explained his psychical condition. The irritative condition of the face was probably explicable by the formation of new connective tissue in the scar. As soon as his attention had been called to the pressure palsy he had been watched at night and prevented from sleeping on his arm, and this had resulted in immediate and decided improvement. It was probable that in time the man would get fairly good use of his arm.

FACIAL HEMIATROPHY.

Dr. Max Mailhouse presented a man, twenty years of age, without neurotic family history. Twenty-two months ago a discoloration had appeared on the right side of the face below the lower lid. It had begun as a pale depressed spot. When first seen by the speaker, the right side of the face had been much atrophied, and the beard had been absent on this side. The mouth had been drawn to the right and the right half of the tongue was very much atrophied. The apparent prominence of the right eyeball was due to retraction of the lower lid. The hair of the right half of the scalp was grayer than on the left, and was falling out. He had been losing his teeth on the right side. The nasal cartilage was wasted, and its tip was turned to the right. The muscles of mastication were also atrophied, and this atrophy was associated with spasmodic pain. There was a fibrillary tremor of the large muscles. The affected muscles reacted feebly to faradization, and normally to galvanism. No scleroderma was found. For the past two months there had been twitching of the muscles at the right angle of the mouth, and at times after laughing, this angle would remain retracted. At such times there was a very tender spot in front of the ear. A blow of moderate severity had been received over the mouth ten years ago. No other etiological element could be elicited, and even this one seemed to have but little weight. The atrophy of the tongue seemed to be a strong argument for the theory that this affection is a tropho-neurosis.

Dr. C. L. Dana said that he had met with several such cases, and found them all quite obscure. At one time the view had prevailed that it was a tropho-neurosis due to some lesion of the trophic root—a condition very difficult to understand. In one of his cases there had been a typical diffuse trigeminal neuritis occurring in a woman of about forty years. The attack had begun with herpes and neuralgia, and had been followed by a general neuralgia in the course of the fifth nerve. After this there had been atrophy and some anesthesia, and finally a peculiar pitting of the face, like that from smallpox. In another case, the trouble had begun, as it often did, with pigmented spots and neuralgia, and this had been followed by anesthesia in spots and a typical progressive anesthesia involving all the tissues, including the masseter muscle and the bone. In this woman there had been deafness and some disturbance of vision on the affected side. It was difficult to understand how a trophic or cen-

tral lesion could cause all these symptoms. A herpes was almost always a sign of peripheral trouble. Another case had been in a woman who had married at the age of seventeen. Her husband had died, it was said, of syphilis a few years later, though the woman denied ever having become infected. She had had a progressive facial hemiatrophy for a number of years, and had finally developed atrophy on the same side, affecting the arm and the leg. In none of his cases had there been anything indicating the true nature of the etiology. Perhaps the best explanation was that of a peripheral lesion as a starting point. He had obtained no definite results from treatment, perhaps because he had not been able to keep these cases under treatment for a sufficient length of time. If the trouble were peripheral, Dercum's idea of resecting the trigeminal seemed to be worthy of consideration.

Dr. Fraenkel asked if any difference had been observed in the behavior of the sweat glands on both sides of the face.

Dr. Mailhouse replied that there had been less sweating on the affected side.

Dr. Joseph Collins thought the disease could be explained just as well by a central as by a local lesion. He was inclined to think that the patient just presented had a lesion in the pons, in the area of central representation of the sympathetic nervous system in the pons. The lesion was probably a slowly progressive one such as a gliomatosis. There already seemed to be involvement of the motor nuclei of the medulla oblongata. The enlargement of the pupil would be explained by an irritation of the sympathetic which had gone on to paralytic effects.

Dr. C. L. Dana presented in connection with the last case a rather rare form of progressive lingual hemiatrophy. It occurred in a man, twenty-six years of age, who had had the trouble three years but had been otherwise in perfect health. The half of the tongue was slightly wasted, and this atrophy was associated with fibrillary twitchings. The patient was a healthy young medical student without history of syphilitic infection or nervous heredity. It did not seem to him necessary to suppose that there was a gliosis, for, Mendel had already shown that there is a change in the motor root of the trigeminal. Of course, these changes might be secondary to degeneration and partial destruction of the nerve.

Dr. Peterson said he was inclined to believe with Dr. Collins that some central lesion would best explain the condition. He had seen several cases, but all of them in a much earlier stage. In none of them had the tongue or the muscles of mastication been involved, or had they presented the same pupillary phenomena.

Dr. Mailhouse thought the dilation of the pupil might be explained by a similar process involving the sphincter pupillae and causing weakness. Hoffman had reported some improvement from the use of galvanism for half an hour daily.

At a meeting of the New York Neurological Society held January 1, 1901, the following report was read and unanimously adopted:

The Committee of the New York Neurological Society, appointed at the request of the President of the New York Commission in Lunacy, to offer suggestions as to a scheme of scientific study of mental diseases in connection with the

State Hospitals for the Insane, begs leave to report as follows:

1. It is to the interests of the State that original research work should be carried on in relation to insanity, in order that the science should be advanced, and better methods of prevention, treatment and cure, discovered. This is of direct interest to the taxpayer, upon whom falls the burden of the care of the insane.

2. There should be one central laboratory in the State, wherein the energies of the best scientific men in the various departments of medicine related to insanity should be devoted wholly and exclusively to the prosecution of original research.

3. Such a laboratory, combining the labors of well-qualified workers in general pathology, neuro-pathology, psychology, chemistry, anthropology, and any other requisite branches, should be able to produce from year to year results which would be creditable to the State as a patron of science, as well as invaluable in advancing the knowledge of the methods of treatment and cure of mental disorders.

4. Each hospital for the insane should have upon its staff of medical officers one physician whose sole duty it should be to conduct ordinary autopsies and to carry on the routine duties of a clinico-pathological microscopist.

5. The central laboratory, or Pathological Institute, should be freely open to any qualified scientific men, for the prosecution of original research work, under the direction of the laboratory experts, preference always being given to the qualified men in the State Hospitals. But systematic teaching of fundamental principles should not be required from any of the departments of the Laboratory. The scientific men in charge of the various departments of the Pathological Institute should devote all their energies to original investigation and not be taxed, hampered or interfered with by medical men who are able to obtain instruction in fundamental principles elsewhere, without cost to the State.

6. The central laboratory for original research should be a part of a reception hospital for the insane, situated on Manhattan Island.

Frederick Peterson, President;	Joseph Collins,
B. Sachs,	Samuel B. Lyon,
Charles L. Dana,	Lewis A. Conner,
Graeme M. Hammond,	William D. Granger,
Ralph L. Parsons,	Edward D. Fisher,
J. Arthur Booth,	M. Allen Starr,
Pearce Bailey, Secretary.	

PHILADELPHIA NEUROLOGICAL SOCIETY.

December 17, 1900.

The President, Dr. William G. Spiller, in the chair.

Dr. D. J. McCarthy presented a case of amyotrophic lateral sclerosis, sent to the nervous clinic of the Polyclinic Hospital by Dr. S. Solis Cohen, in which the atrophy and paralysis were almost confined to the muscles of the shoulders and upper arms, and the movements of the hands were good.

Dr. Francis X. Dercum said that he had seen the case on one occasion and regarded it as one of muscular atrophy of spinal origin. The rapid progress of the case he regarded as very unusual.

Dr. William G. Spiller said that syringomyelia sometimes caused this form of muscular atrophy and paralysis, even without the dissociation of sensation, but such cases were very rare.

Drs. C. K. Mills and T. H. Weisenberg presented cases illustrating the differential diagnosis of cerebral and hysterical hemianesthesia.

Dr. William G. Spiller said that many anatomists still hold the view of Charcot that a sensory tract exists in the posterior part of the posterior limb of the internal capsule, although they are unable to demonstrate the continuation of this tract in lower levels of the cerebro-spinal axis. Dejerine teaches that the fibers in the retrolenticular portion of the internal capsule come from the temporal lobe and that the thalamus and not merely the internal capsule must be implicated in these cases of persistent hemianesthesia. The lemniscus is probably a sensory tract, but there may be other sensory tracts. There is no evidence to show that the lemniscus is in relation with the retrolenticular portion of the internal capsule.

Dr. Spiller said that in two or three cases in which the Gasserian ganglion had been removed for tic douloureux he had found anesthesia on the operated side sharply limited by the median line of the face. In one of these cases the ganglion had been removed two or three years previously. Limitation of anesthesia at the median line of the body occurs in organic as well as hysterical anesthesia.

Dr. Charles K. Mills was not convinced of the truth of Dejerine's views that there is a complete admixture of fibers of sensation and motion in the limb of the capsule. Cases are on record which clearly indicate that from a one-sided lesion, between the thalamus and cortex, in regions which are not motor in the ordinary sense of motor localization, there may be distinct disorders of sensation. Partial anesthesia has been present from lesion of the gyrus fornicatus. He had reported a case in which irregular anesthesia was associated with a lesion involving the cortex and subcortex of both parietal lobes. Cerebral lesions outside of the thalamus and outside of the motor region may give rise to anesthetics of various sort.

Dr. William G. Spiller said that he did not wish to be misunderstood. He had not discussed the diagnosis between thalamic and cortical lesions, but referred to the view that lesions of the posterior part of the posterior limb of the internal capsule cause anesthe-

sia when the thalamus is not involved. It is very probable that cortical lesions may produce disturbance of sensation.

Dr. Charles K. Mills believed that instead of the sensory and motor fibers intermingling throughout the entire posterior limb of the capsule, the former were more or less concentrated posteriorly. He believed that there were two relays to the motor cortex. He held that while the thalamus was a great center for common sensibility a special system of neurones passed to the sensory cortex, and another from this region to the motor cortex.

Dr. Wm. Pickett read a paper on the insanities of adolescence.

Dr. Charles K. Mills considered the paper to be one of great value especially as presenting the results of the personal observation of the author.

Dr. Francis X. Dercum, referring to the fact that paranoia occurs at a later age than the other varieties, said that it was suggestive that the later the degeneration begins the more is it like that of middle life.

The katatonic cases are interesting because they afford a rather more hopeful prognosis than the other varieties. He had seen a limited number of cases of mild hebephrenia also in which the mental degeneration fell to a certain level and then under powerful stimulation of nutrition and re-education surprisingly good results had been obtained. With regard to diagnosis, it is not an uncommon error to find that the diagnosis of melancholia has been made when subsequent observation shows the case to be one of hebephrenia.

Dr. Daniel E. Hughes said that the insanities of adolescence were increasing. He considered heredity one of the striking features in the diagnosis. There is a large group of insanities that develop during the ages of puberty and adolescence that are curable. In the period of life between the ages of 12 and 30 years we have acute manias and melancholias which run the ordinary course and recover, and in which no evidence of mental weakness remains, but in the group of cases that has been pictured by Dr. Pickett the tendency is to dementia. These insanities occur at a developmental time when the experiences of youth are becoming memories and these memories are organising into ideas and percepts. Whether the symptoms are those of the hebephrenic, katatonic or paranoiac type will depend upon the age at which they appear, the older in the adolescent period the more systematized the so-called delusions. It is well known that a fair proportion of the insanities peculiar to adolescence do make at least a temporary recovery. He had seen cases which after running the various cycles of mania and melancholia for two or three years gradually get well and go out into the world and remain for three or four years, and then return with the whole group of symptoms as they were originally, with a more rapid progress towards dementia. This brings up the question, Are these people who have this unfortunate heredity, properly cared for? Is there not something in their environment which has a tendency to cause this breakdown? Is it not the duty of some one to take hold of these youths and surround them with influences which may prevent them from becoming chronic dements?

Dr. C. W. Burr reported several cases in which astereognosis was a prominent symptom.

Dr. Francis X. Dercum said that he had recently gone over a number of cases with regard to this symptom to determine if it were possible to give it a definite clinical value. It may be present in peripheral nerve affections with sensory disturbance; it may be present in certain forms of cord disease as locomotor ataxia and ataxia papaplegia, and in other cases it is due to cortical involvement. In these the separate senses may be preserved, the patient recognizing weight, pain and pressure, but being unable to combine these sensations to form a concept. Such cases as these he thought must be referred to the cortex. Whether the superior parietal lobule is the only area lesion of which gives rise to astereognosis was doubtful, and future studies alone would prove this. At any rate he had found that preservation of the muscle sense was not essential, but loss of the spacing sense had almost invariably proven a serious defect.

Dr. Joseph Sailer said that he had been interested in one point to which he had seen no reference, that was the occurrence of transient astereognosis due to cerebral lesion, which he thought comparable to the transient aphasia. He agreed with Dr. Burr that it is difficult to say which of the senses is most important in stereognosis. Experiments on normal persons led him to believe that the muscle sense is not of vital importance. He thought that considerable light would be thrown upon the subject by a series of studies made on normal individuals.

Dr. William G. Spiller had understood Dr. Burr to refer to his second case as "object blind," using the term in the same sense as "mind blind." This he considered an interesting observation as the lesion was only on one side of the brain in the angular and supramarginal gyri.

With regard to the statement that the center of stereognosis is in the posterior part of the superior parietal lobe, that is very different from saying that lesion of that part will cause astereognosis. If the former statement were correct then only those forms of sensation which are represented in the parietal lobe would have anything to do with stereognosis. We have reason to believe that the parietal lobe is concerned in sensation, but it is probable that the motor area is also partly sensory.

Dr. Charles K. Mills thought that the facts presented by Dr. Burr helped to substantiate the statements which he had made in regard to the old views of Charcot and the new views of Dejerine. He did not believe that either view represented the exact truth. He thought that it was a mistake to restrict the sensory area of the cortex to the superior parietal lobule. He believed that the sensory region comprised a large area surrounding the motor area on all sides, and abundant facts tend to confirm this view. A unilateral cerebral lesion probably produces complete anesthesia only when it is thalamic. He thought that Dr. Burr's patient had an organic lesion which was responsible for the sensory symptoms, and that there was large involvement of her cortical sensory areas with little or no destruction of her motor cortical areas. It may be that a partial thalamic lesion or a subcortical parietal lesion might explain the case.

Dr. Charles W. Burr said he believed there is a distinct area of the brain which we may call the tactile perceptive area in which are stored the tactile memories and in which are grouped together all the sensory factors which go to make up a concept of the thing handled. In order to get a true conception of an object this tactile con-

cept is combined with visual and, in less degree or at least less frequently, with auditory, olfactory and gustatory concepts. He believed this tactile perceptive area to be in the hinder portion of the parietal lobe and entirely separate from the motor area. Stereognosis may be due to an absence of some of the primary sensory factors, or it may be caused by disease of the tactile perceptive area, in which case there is either a tactile amnesia or an inability to group together the different sensations, just as a patient may see objects and not conceive them, or may feel objects and not conceive them.

PAGE

NEURASTHENIA, ETC., WITH ESPECIAL INVOLVEMENT
OF THE SENSORY NEURONE.

Dr. F. Savary Pearce reported the following case: The patient, a physician, aged 38, is a member of a family of nine, without nervous heredity. In his early life the man suffered extremely from torpid liver and constipation, and has always been compelled to use cathartics. He was in good health until four years ago. Moving from the country to a city and to work largely of a clerical nature which confined him indoors for long hours, he soon developed trouble from the liver again, accompanied by vague feelings in his head as of a band pulled about the brow. His sleep became disturbed by what he thinks was intense paresthesia and causalgia in the feet. This annoying symptom extended up to the knees, although there was no anesthesia. He soon began to complain of numbness in the left arm, worse upon exertion and after a hearty meal. Vigorous massage would always alleviate this latter symptom. The next phenomenon was a sense of titillation in the larynx accompanied by frequent dry coughing. He noticed vague urinary symptoms as of "pain passing down the ureter." At this time, he particularly remarked the tendency to "catching-cold" easily. He was placed on aperients with copious draughts of hot water, and the use of digestants. His nervous symptoms improved under this treatment but the laryngeal irritation continued, although digestion and assimilation were never perfectly performed.

In July, 1899, the patient began to suffer from fleeting spasmodic pains in various muscles of the lower limbs. These attacks would occur at intervals of a few days to a few weeks, would seldom be localized at more than one point at a time, and would last for several hours or the entire day. Six months later the left skin surface of the upper lip became numb, and has continued so in varying degree until the present time, and the numbness is now symmetrical, embracing the entire chin and cheeks up to the lower eyelids. In addition to the feeling of numbness and actual "deadness" to all

sense of pain, there is marked feeling of tension. A similar area of altered sensation at one time existed in the perineum. There is a general paresthesia about both gluteal regions, but down the outer sides of thighs there seems to be slight hyperesthesia. The knee-jerks are absent, but Romberg's sign or other evidence of organic disease are not present. Frequently during the waking hours, a sensation is experienced in the face as though five or six small shot or the ends of the same number of stiff hairs were thrust quickly against the skin. Sexual power is very much reduced. The stereognostic sense is normal. Examination of the urine has revealed marked indican reaction in several specimens, but never albumin or sugar. There has always been a marked difference between the morning and evening specific gravity, also irregular acid excretion, which may indicate alteration of general metabolism. The eye examination is entirely negative. Dr. Pearce believed that the disease was entirely one of neurasthenia with hypochondriacal manifestations; and that under nutritional measures, and change of scene, the sensory tract function would be restored.

Dr. Charles W. Burr suggested that the case might be hysterical. The analgesia changed from day to day. The laryngeal irritation would confirm with this view. Neither anesthesia nor laryngeal spasm is a symptom of neurasthenia.

Dr. Charles K. Mills spoke of the probability of the case being one of tabes. The loss of the Achilles-jerk, the diminution of the sexual power, and the coming and going cramps pointed in this direction, while the laryngeal attacks might be laryngeal crises.

Dr. H. A. Hare suggested that the case might as likely be one of pseudo-tabes due to neuritis. Many cases of hysteria in males are neurasthenic in origin. He had seen men utterly worked out, with loss of knee-jerk and less acuity of sensation than normal in certain portions of the body. He was inclined to think that the hysterical symptoms were due to nervous exhaustion. The crucial point in a case of this kind is the eye examination, which he understood had not yet been made. The eye examination will probably give useful information whether the case be hysterical or tabetic.

Dr. Wharton Sinkler had examined this patient six weeks ago and was satisfied that he was suffering from neurasthenia and hysteria. At that time the knee-jerks were absent but could be developed by reinforcement. He thought that the analgesia and the paresthesia were hysterical and that there was hysteria superimposed upon the neurasthenic condition.

Dr. F. S. Pearce considered that the neurasthenia was the fundamental condition. The man has been overworked and had every reason why he should suffer from neurasthenia. He considered the disease to be a so-called functional one, and that under appropriate hygiene and treatment the mental depression of the patient would be removed first, then physical restoration to health would follow. The absence of knee-jerk will occasionally be found in such cases of malnutrition of the central nervous system.

Periscope.

CLINICAL NEUROLOGY.

PERIPHERAL NEURITIS FOLLOWING THE USE OF ARSENIC IN CHOREA.

F. C. Railton (Medical Chronicle, February, 1900).

This study is based on four patients with chorea treated by arsenic at the Manchester Clinical Hospital, in whom serious symptoms of paralysis developed. The ordinary toxic symptoms of arsenic; disturbance of the stomach, diarrhea, puffiness of the eyes, etc., were noticed in only one of the patients, and the paralysis, which affected the lower extremities principally, came on gradually several days or even weeks after termination of treatment, and in most instances after the return of the patient home. All the patients eventually recovered after a protracted convalescence. Because of the slow elimination of this metal from the system, the author concludes that an aggregate of 6.3 grains of arsenious acid, even when distributed over a period of three weeks, is sufficient to produce peripheral neuritis in a child.

JELLIFFE.

ZUR SYMPTOMATIK DER GESCHWÜLSTE DES BALKENS (Symptomatology of Tumors of the Corpus Callosum). H. Zingerle (Jahrbücher für Psychiatrie und Neurologie, Vol. 19, 1900, p. 367).

Clinical history: Man fifty years old. Beginning of symptoms seven weeks before with sudden dulling of consciousness, stupor, inability to stand erect, weakness in legs, sleepiness, and mental confusion. Present condition: somnolent, confused, marked amnesia, mental weakness, expression fixed, speech slow, no aphasia, slow pupil reaction, bilateral optic neuritis, tremor of tongue, weakness in all extremities, inability to stand or walk, increased reflexes, then fever, muscle spasm, progressive weakness in muscles more marked on the right side, exitus. Autopsy: Dura adherent, pia somewhat stretched, thickened here and there, hyperemic. The corpus callosum bulged in its middle and of a reddish color. On opening the lateral ventricle in a line corresponding with the middle of the corpus callosum a tumor mass, 4 cc. long and 3 cc. broad was found. This tumor is of firm consistency and reddish in color. The mass extends in front to the septum pellucidum and bulges laterally into the lateral ventricles in consequence of which they appear somewhat narrowed, as is likewise the case in the third ventricle. The ependyma of the corpus callosum appears somewhat thickened, the brain substance soft, somewhat hyperemic, the cortex somewhat small, with widened sulci. In other organs nothing abnormal. The tumor was diagnosed as a round-cell sarcoma, rich in blood vessels. The anatomical findings showed clearly that the tumor developed at the region of the right taenia of the thalamus opticus, and secondarily involved the corpus callosum. Some of the clinical features of a tumor in this region are as follows: The absence of pressure symptoms other than that of optic atrophy which is found more often in callosal tumors than elsewhere. A slight paresis of the muscles together with an absence of cranial nerve involvement. The paresis is due to the pressure on the motor tract in the internal capsule. The one

definite focal symptom of a callosal tumor, which can be explained by the direct effect upon its fibers is the psychical state of stuporous dementia, due to the injured association function of the fibers of the corpus callosum. It is also probable that in addition to the psychical function of the corpus callosum, it has to do with the innervation of voluntary muscles and their co-ordination in homolateral movements of the body. This has been experimentally proven in animals by Mott. In this case there was an extreme disturbance of equilibrium together with ability to use a single extremity in isolated movements. This symptom has been observed before in tumors in this region. The co-ordination disturbance which affects chiefly those muscular actions which have to do with retention of equilibrium is a focal symptom of callosal tumors and the name callosal ataxia (*balken ataxie*), may be given to it. The poverty of movement in this case may be ascribed to the diminished physiological stimuli which normally pass through the fibers of the corpus callosum. In doubtful cases of tumors in this region this last symptom may be of diagnostic utility.

SCHWAB.

OBSERVATIONS ON BRAIN SURGERY. Geo. W. Crile (Medical Record, February 17, 1900).

As a result of a large number of experimental researches on the brains of animals, the author says, that the immediate effect of increased intracranial pressure is not marked until the brain is compressed for from five to seven per cent. of its volume. Respiration is affected sooner and more profoundly than the blood pressure. Respiration is at first slowed, then arrested. The higher the blood pressure, the higher is the intracranial pressure necessary to cause respiratory paralysis, and when such arrest has occurred, if the blood pressure is increased respiration may be resumed. In the presence of respiratory arrest, if artificial respirations are produced blood pressure usually rises, and natural breathing may reappear.

Increased intracranial pressure causes slowing of the heart, followed by intermissions and later complete arrest. When pressure persists, the inhibitory mechanism fails, and very rapid heart action follows. The intracranial and the blood pressure vary inversely. With the brain under pressure, less anesthetic is required to cause surgical anesthesia, and the deeper the anesthesia the earlier and more abruptly respiration fails. When respiration or circulation or both are affected by conditions causing increased intracranial pressure, it is fair to assume that the brain has suffered compression equal to five per cent. of its volume, except in cases where their centers in the medulla are directly affected. A pulse frequently alternating between a very rapid and a very slow action, indicates an exhausted cardiac center, a fatal prognosis, and a very strong contraindication to operative procedure. At the same time the vasomotor system is exhausted. During operation an assistant should always be ready to do artificial respiration, and ice and hot water should be at hand for alternate application to chest and abdomen as respiratory stimulants. If respiration ceases and cannot be renewed, the skull should be opened as quickly as possible and the pressure relieved, when normal breathing will almost surely recur. The first effect of blows on the skull, gunshot wounds, rapidly increased intraventricular pressure, etc., is respiratory failure, while the heart continues beating for some minutes. Therefore artificial respiration is an important first-aid in brain injuries, and since increase of blood pressure favors the return of spontaneous breathing, proper stimu-

lation should be given. There is a well defined area, external to the olfactory tract, and in front of the uncinate gyrus, stimulation of which causes arrest of breathing. This area rests directly against the base of the skull and is therefore liable to injury by either direct or indirect violence. In one case, dying of respiratory failure after a fall, autopsy revealed a marked laceration of this part of the brain.

JELLIFFE.

DE LA GENERALISATION DES CRISES EPILEPTIQUES CONSECUTIVES AUX TRAUMATISMES LOCALISES DU CRANE CHEZ L'ENFANT ET DE LEUR TRAITEMENT. (Generalization of Epileptiform Crises Due to Localized Traumatism on the Skull in Childhood.) Chipault (*Travaux de Neurologie Chirurgicale*, April-July, 1900).

Chipault states that while in the adult, injury to the cortex only causes Jacksonian epilepsy, as a rule, in the child we usually find that without the slightest predisposition, the most limited trauma may cause general convulsions. The author relates ten cases to demonstrate his thesis and several cases are here given as examples.

Case V.—H. F., aged four years; spasmodic hemiplegia with epileptiform crises. Cause probably an intra-uterine trauma, the mother having fallen when she was seven months pregnant. The labor itself was easy, and the child was normal at birth. When seven months old, the spastic paralytic condition was first noted, and at about the age of one year, slight epileptiform crises appeared, which soon degenerated into ordinary epileptic attacks. Chipault first saw the child when it was four years old; it was well developed and bright, but could hardly walk, and had speech disorders and convulsive attacks. A cranial depression was found corresponding to the Rolandic zone. Chipault performed resection of the cranium; beneath the dura a cicatricial area was found in the cortex. During the next six months there was but a single crisis; the patient then passed from observation.

Case VII.—D. F., aged nine years; was hit at age of one year on the vertex of the head by a piece of cornice. Fracture of skull diagnosed, but no surgical treatment. During the eight or nine months no bad results, but gradually periods of "absences" set in, followed by generalized epileptic crises. Spastic hemiplegia then developed on both sides. When Chipault saw the boy he was nine years old. Contractures were marked, but no muscular atrophy. Epileptic seizures at the rate of two or three per week. Chipault proposed an operation, but patient had not presented himself at the time of writing.

These ten cases reported show without doubt that this species of general epilepsy may be due to intra-uterine trauma, obstetrical trauma, and injuries of ordinary character. The injuries varied greatly in character; simple fracture, flattening, depression, perforation; finally, several cases presented no lesion whatever. If the lesion was seated outside the motor zone, the generalized convulsions constitute the dominant symptom. If within the motor area, the convulsions were still prominent, but the hemiplegic phenomena were more in evidence. Briefly put, extra-Rolandic trauma equals epileptic seizures; Rolandic trauma equals the same number of seizures but of a spasmodic hemiplegic form.

CLARK.

INTESTINAL NEUROSES. J. W. Rothwell (*Medicine*, March 1900).

The author proposes the following classifications:

(1) Peristaltic restlessness dependent upon increased irritability of the motor nerves of the small intestine, and causing gurgling,

or squeaking, rumbling, croaking, and brought on by emotional excitement and not accompanied by diarrhea, as the colon is unaffected.

(2) Peristaltic activity extending to the colon and upper part of rectum, and followed by precipitate diarrhea. These conditions are benefited by general treatment with arsenic or methylene blue.

(3) Enterospasm (or concurrent spasm of both round and long muscular fibers), due to increased excitability of the splanchnic nerves, and indicated by colicky pains and a doughy fecal tumor at or near one of the flexures of the colon. This may be relieved by warm abdominal cataplasms, opium or codeine, and soothing enemata. In this condition the administration of opium may be followed by a movement of the bowels.

(4) Ordinary colic, or temporary spasm due to local irritation. The cutting pains are probably due to the pressure of the contracting muscles on the terminal nerve-filaments, and may be overcome as well by antispasmodics as by anodynes.

Of the disturbances of *sensibility*, he describes: (1) anesthesia is normal except in the lower portion of the rectum. When this becomes anesthetic, as in hysteria, involuntary fecal passages may result. (2) Hyperesthesia, a feeling of distension without tympanites, of soreness without discoverable organic cause, of throbbings, flutterings, etc. (3) Neuralgia, a boring, pinching, or cutting pain centering about the umbilicus, sometimes accompanied by vomiting and feeble pulse, and suggesting peritonitis, appendicitis, renal or hepatic colic, or lumbar neuralgia. However there is no fever, the constipation is not obstinate, and the pain is relieved by pressure. Of secretory disturbances; Mucous colic, and excessive secretion of mucinoid, nonfibrinous material, coagulating on the inner coat of the bowel and discharged at intervals with colicky pains. It occurs usually in neurotic females, and is very resistant to treatment. One may use olive or castor oil as a laxative, cannabis indica for pain, sodium phosphate to prevent fermentation, and salol, resorcin, or bismuth salicylate. JELLIFFE.

EIN FALL VON VASOMOTORISCHER NEUROSE, ZUGLEICH ALS BEITRAG ZUR KENNNTNIS DER NERVÖSEN STÖRUNGEN IM KLIMAKTERIUM (A Case of Vaso-motor Neurosis, as a Contribution to the Knowledge of Nervous Disturbances in the Climacterium). H. Zingerle (Jahrbücher für Psychiatrie und Neurologie, Vol. 19, 1900, p. 343).

Case.—A woman 46 years old. No nervous heredity. Neuralgic symptoms and migraine, which declined in severity during the climacterium. At this time the patient noticed a diffuse swelling of the fingers and hands on both sides, accompanied by vague pains in the arms and shoulders, more pronounced at night. The fingers were reddened, then pale and cyanotic. Subjectively there was a sensation of cold and slight pain in the fingers, stiffness with dulness in the perception of the finer movements. With the approach of warm weather these symptoms grew better. The next winter the condition returned unchanged. Physical examination showed no abnormality either in the internal organs or in the nervous system, except for a slight thickening of the skin of the fingers. No other trophic disturbance was found. The diagnosis in this case must first of all be made between a disease of the blood vessels and an organic disease of the nervous system in the course of which vaso-motor symptoms are prominent factors. A careful examination failed to reveal any

ground for either of these diagnoses. These symptoms can only be produced by a disturbance of the vaso-motor function of the nervous apparatus. In comparing this case with the vaso-motor diseases as found in literature, the author comes to the conclusion that it corresponds in many respects to the so-called akroparesthesia of Schultze, and to erythromelalgia, but differs from both of them in the absence of important sensory symptoms. The author's conclusions are as follows: This case is a symptom-complex of a separate neurosis of the vascular system for whose occurrence two causes are of importance; a neuropathic disposition and the climacterium. Certain locally acting influences are only so far important in that they select a certain vascular territory which gradually is brought under the influence of the main cause.

SCHWAB.

EINE WENIG BEKANNTE PUPILLENREACTION (LIDSCHUSS) REFLEX UND IHRE THERAPEUTISCHE VERWERTHUNG (A Little Known Pupillary Reaction, and Its Therapeutic Application). Kirchner (Münchener medizinische Wochenschrift, 1900, xlvii. 44, p. 1532).

The author has observed a pupillary reaction which he describes as little known, though other observers (notably Westphal and Piltz from the neurological side), have elicited it in a slightly different way, and have put it on record. In the case of a patient having complete ophthalmoplegia interna—the left eye affected for a year, the right eye having recently become involved—the pupils widely dilated, and reacting neither for light nor for accommodation, he noticed, that when the lids were forcibly pressed together, the left pupil at once contracted, dilating again when the lid was raised. Struck by this, and as the patient was much inconvenienced by the extreme mydriasis, he was led to order frequent exercise during the day at pressing the lids forcibly together. At the end of a week the right pupil also reacted, and by a continuation of the exercise, it was found that not only did the pupils react, but they remained of moderate size, slowly dilating again when the exercises were intermitted for some time. By persistence in his exercises, the patient was able to keep his pupils of moderate size, and to resume his occupation, that of a musician, without the difficulty in reading notes which he had formerly experienced. Reaction for light and accommodation remained absent. The author concludes that this lid closing reflex is present in all or at least in the majority of normal individuals, and that it may persist when reaction for light and accommodation is lost. He suggests that it may be of some diagnostic importance in diseases of the nervous system, but has not extended his observations far enough to make any definite statements as to this point. He closes his article with a somewhat extended discussion as to the anatomical arrangement of the nerve supply to the orbicularis, which need hardly be reviewed here, since he gives no new evidence on the subject.

ALLEN.

INTRACRANIAL PRESSURE. W. N. Bullard (Journal American Medical Association, June 30, 1900).

The case is cited of a woman who for years suffered at intervals from "feelings of pressure" inside the head, and during these attacks became unconscious. Physical examination was negative; there was not any affection of either optic nerve or retina, and the mind was unaffected. The cranium was trephined on the right side, just in front of the coronal suture one inch from the sagittal suture, and

the hole enlarged to about three by two inches. The tense dura bulged about one inch and did not pulsate. The protruding portion of brain was excised and the wound closed. Two years later the patient was still free from all trouble. Such cases are not so very rare and are occasionally classed as neurasthenia. From this and a few somewhat similar instances he gives the following conclusions: There exist certain non-traumatic cases of increased intracranial pressure of unknown or doubtful origin; whenever such pressure causes serious symptoms one must consider operative relief; in certain cases cure may result, and in all cases more or less permanent relief will be obtained; in cases of severe acute optic neuritis of unknown origin the question of relieving pressure by trephining should be considered.

JELLIFFE.

UN CASO DI PSICOSI DEGENERATIVA EPILETTICA A FORMA LARVATA CON ECCITAMENTO ALCOOLICO E IMPULSO OMICIDA (Case of Degenerative Epileptic Psychosis of Masked Type with Alcoholic Excitement and Homicidal Impulses). A Bussi (Rivista sperimentale di freniatria, July 29, 1900).

Male, aged fifty-three years; former soldier. On a given morning he had drunk freely of wine and cordials according to his custom. Having his gun with him he shot into a group of people killing one outright and wounding several others. He then walked calmly away and presently saw another man, a total stranger to him, at whom he pointed his gun. The stranger fled in haste but was shot in the back. The patient then went away for a short distance and secreted himself. The police followed and called him by name, and as he did not reply they went farther and found him asleep. He was roused with difficulty and waked in a state of confusion. To the magistrate he replied that he had no recollection as to what had transpired. He was prosecuted for homicidal attacks and the Court affirmed his irresponsibility.

The patient weighed about 180 pounds; his facial expression was insignificant, apathetic; pupils dilated irregularly; a few slight marks of degeneracy (handle-like ears, etc.). Father affected with suicidal mania. As a boy he was queer, violent over trifles. He began to drink at the age of fifteen years, and when drunk he attempted to smash everything, and his drunken attacks were followed by prostration. During his military service, twelve years before, he drank to excess, following which, violent exhibitionism occurred, followed in turn by sound sleep and amnesia. It appeared from the trial that the patient had suffered with delusions of persecution; that he quarreled readily with his best friends. The patient exhibited such violent ferocity and precipitancy in executing his plans as to warrant the diagnosis of criminal epilepsy. The patient never had epileptic convulsions. The alcoholic excitement precipitated attacks of psychic epilepsy.

CLARK.

MEHRJÄRIGE EPILEPSIE UND IDIOTISMUS VÖLLIG GEHEILT NACH EINEM ANFALL SCHWERER INFLUENZA (Complete Recovery from Epilepsy and Idiocy of Years Duration after an Attack of Influenza). Coveos (Allg. Wien. med. Ztg., Aug. 21, 1900).

Coveos, a Greek physician, states that two years ago influenza raged throughout Greece, sparing neither age nor sex. Among those attacked was a boy of ten years with the following history: When three years old, he developed epilepsy, attacks occurring every day and limited to facial muscles. Saliva ran from the mouth at the

time, and severe headache followed. The child's birth had been normal; no anomalies of development nor history of injury to head. No family history of neuropathy, etc. After the sixth year of age, signs of idiocy were apparent and rapidly increasing, so that at the age of eight, idiocy was complete. He ate fecal matter, etc. The influenza which attacked this boy was of a severe type, lasting thirty days. After recovery, which was unexpected, no sign of idiocy or epilepsy remained. Intelligence was marked, and the child made better progress than his healthy brother and many comrades. Coveos confesses that this outcome of the case is a great mystery to him.

In discussion, Dr. Foustanos, editor of *La Grece Medicale*, attempts at great length to explain the paradox as follows: The case could hardly have been one of essential epilepsy. The latter disease besides, while it weakens the mind, never leads to total idiocy. The convulsions must have been symptomatic of some brain disorder, the constancy of the affection being also noteworthy and pointing to some lesion of the brain. The rapid failure of the mind also argues for the existence of some secondary pathological alterations. The organic affection which may have been present was doubtless of the following: (1) Hydrocephalus, acute or chronic, the pressure of which may cause convulsions and atrophy of the cortex. (2) Sclerous encephalitis, which may be due to a variety of agencies (trauma, intoxication, malformation of the skull). (3) Meningo-encephalitis, same etiology as preceding. (4) Hemorrhagic foci and exudates in meninges or cortex, which often result from accidents of birth. (5) New formations in meninges or vault of skull. (6) Congenital defects (porencephaly, microcephaly, premature ossification, etc.). How could recovery from any of these conditions be possible, and how could influenza bring it about? One must clearly exclude all affections which cause permanent destruction of nerve tissue, such as sclerosis, interstitial encephalitis, etc. All of the congenital defects must be eliminated. Something must have been present to cause convulsions and lead to dystrophy of the cells, either hydrocephalic effusion, hemorrhagic or inflammatory exudation into the meninges, etc. The high temperature of influenza must have caused resorption of such effusion or exudate. The most probable cause was a mild type of hydrocephalus with a moderate amount of effusion.

CLARK.

SOME CASES OF BRAIN INJURY. E. E. Dyer (Lancet, Vol. I, 1900, June 16).

The author reports some interesting cases of brain injury as follows: Case I.—Laborer, aged twenty years, was struck by revolving steam winch handle, resulting in a compound depressed comminuted fracture of the vault, with large scalp wound. He was unconscious, insensible except to strong stimuli, stertorous, free local hemorrhage, twitchings, and convulsions. Trephined and one large and several small pieces removed, dura sound to naked eye. Depression still present in vault, relieved by elevation with fingers. Breathing at once better. Gradual recovery of consciousness, asking for things wanted; drain out in third day; no suppuration. On the ninth day reddish erysipelatous swelling appeared over nose, high temperature, soon disappeared. On the seventeenth day sat up in bed and ate solids. On the twenty-first day a similar red mass appeared in the parieto-occiput. Photophobia set in and death occurred on the twenty-sixth day. The post-mortem showed a healed wound, a fracture extending to the left ear, thence along the base

through the left orbital plate and across the vault to the right ear; dural thickening and adhesions to the site of injury; pus over the meninges at vertex, base and spinal cord; abscess of each frontal lobe. The clinical features were edema due to abscess which in left side broke into the ventricle and relieved lesion and temperature; large destruction of brain substance; extreme photophobia; length of time patient survived, and absence of paralysis.

Case II.—Soldier, aged fifty-six years, was ill several days before admission; right hemiplegia; slow speech and cerebation; eight day violent convulsion, controlled by drugs; no more convulsions, but frequent twitching; death twenty-four days after admission, thirty days after first seizure; nourishment taken up to day of death; highest temperature 99.8° F.; no affection of breathing. Post-mortem lesions were as follows: Dura frequently and firmly attached to the calvarium; its veins enormously dilated; brain substance very soft; on section left hemisphere showed three clots, the first, 1 $\frac{3}{4}$ inches in diameter, near surface just below the fissure of Rolando; the second lower down inside the middle frontal convolution; the third in the occipital region; on the right side three other clots in about the same sites and sizes were found; of all the oldest was in the right frontal and the newest in the right occipital lobe; a seventh clot was in the left cerebellar hemisphere. Apparently the cerebellar clot alone caused the convulsions, because there was only one attack of them. The difference in the ages of the frontal clots ought to have caused two sets of convulsions which was not the history.

Case III.—Brain injury without death. The patient, a lad was caught between a fixed upright beam and a horizontally moving machine arm $\frac{3}{4}$ of an inch square; small temporofrontal scalp wound; probe disclosed fracture and tract into brain, 2 $\frac{1}{2}$ inches deep, by its own weight; no operation; sterile dressings; recovery; at time of injury he walked 200 yards for medical help. These cases seem to show great effort by the brain to repair damage, and ability to sustain enormous injury.

JELLIFFE.

THERAPY.

DIE THYREODISCHE NAHRUNG IN EPILEPSIE (Thyroid Feeding in Epilepsy). Froehñ and Hoppe (Psych. Woch. 1899, No. 35).

The authors hold that in epileptics nitrogen excretion is imperfect and therefore thyreoidin is indicated as a remedy in certain cases of epilepsy. Two patients were chosen for experiment, one was dependent upon a focal brain lesion. During administration of thyreoidin the elimination of NaP₂O₅ and NaCl were increased. In the case of focal epilepsy the bodily nutrition was not disturbed, but in the idiopathic case the seizures ceased as soon as the nitrogen eliminated exceeded that which was ingested. It ultimately became necessary to discontinue thyreoidin because of loss of weight and irregular pulse; upon its withdrawal the convulsions returned.

CLARK.

DORMIOL IN EPILEPSIE (Dormiol in Epilepsy). E. Schultze (Neurol. Centralbl. March 15, 1900).

In an article on this new hypnotic the author first shows that the drug is a product of the chemical union of a phenacetin derivative and chloral (dimethyl-ethyl-carbinol-chloral). It has an odor like menthol, is soluble in most menstrua but in water only after prolonged standing. It may be used in the same dosage as chloral. It

has been given freely in the local (Andernach) provincial hospital (60 cases) and was found to be an excellent hypnotic, usually producing sleep inside the first half-hour, the effects persisting from five to seven hours. The author thought it would be a beneficial remedy in the period of excitement of epilepsy as both its congeners, chloral and hydrate of amylene have that property. It was given in some cases hypodermically to the epileptic patients. There was never any local reaction. The drug was used only in a few old cases. While the author is not enthusiastic over the results obtained, further careful trial is suggested in more favorable cases. CLARK.

DIE BEHANDLUNG DER EPILEPSIE (The Treatment of Epilepsy).

Kothe (Neurol. Centralbl. March 15, 1900).

The author speaks hopefully of the prospect of curing epilepsy; his own personal experience is becoming more favorable each year. During the past thirteen years he has treated forty-seven cases of genuine epilepsy for long periods, all were from the better class, mentally sound, and ages ranged from seventeen to thirty-nine. His plan of treatment may be summed up as follows: (1) There is no specific for idiopathic epilepsy, instead there is a regimen made up of numerous factors each more or less important. (2) Treatment must, when possible, begin as soon as the diagnosis is made and be continued for six months at least, and if possible one or two years. (3) Treatment should be carried out at an appropriate place. Climate is an important factor. The most favorable locality is a wooded country of moderately high elevation. (4) The whole life must be regulated, including psychical, motor and vegetative functions. (5) Particular care is necessary with regard to the bed-rest and sleep. Wetterstrand's psychical treatment of prolonged hypnosis is not counseled because confidence in the physician will be better than suggestion. (6) Not less important is diet; vegetable food is to be preferred (Ziehen forbids strong broths); too concentrated foods are bad. (7) All violent and sudden therapeutical procedures must be avoided. A luke-warm bath or pack daily may be safely given, but even this should be intermitted one day in the week. (8) Electricity, massage and gymnastics have not been brought by the author in accord with curative results. All these measures have a local value, however, such as in antagonizing paralyses, etc. (9) Of all internal remedies bromides give the best results, they are a link in the curative chain and their use must be continued for long periods. The different salts may be alternated, as in prolonged administration the system gets too much potassium, etc., as well as bromide. (10) Bromipin (10% bromine in oil of sesame) gives especially good results without producing bromism. It has also a high nutritive value. (11) When bromipin cannot be taken by mouth it may be given by the rectum. One dose is given just before bedtime; given per rectum, bromine is found in the morning urine. The author used a special 33 $\frac{1}{4}$ solution in status epilepticus with good results. (12) For old cases in which bromides are of no avail, Flechsig's treatment may be employed. The author has got several good results from it. However, since using bromipin he has not had occasion to employ the Flechsig treatment. When a new case is admitted whether old or recent, the author first places his patient at rest in bed for a number of weeks; he is disturbed only to receive a luke-warm bath perhaps twice weekly. No medicines are taken at first, but after a week in bed, the bromides or bromipin are begun, and usually bromipin per rectum, going from 15 to 40 c.cm. daily. The maximum is held for two or three weeks

and the dose is then reduced to the initial in six or seven weeks more. Recoveries are now obtained where before they were not obtainable, but no figures are given. CLARK.

DIE BEHANDLUNG DER EPILEPSIE (The Treatment of Epilepsy).
Fürstner (Allgem. Zeitschr. f. Psychiatrie, March 1, 1900).

The author read a paper on this subject before the 30th meeting of the Southwestern Society of German Alienists, which was fully discussed. His paper contains nothing especially new, being a good summary of the modern school of epileptology (institutional treatment, etc.). He spoke of some cases in which convulsions immediately cease when patients are brought into an asylum and bromides discontinued. In the discussions following, Battlehner asked for an explanation of this fact; in reply it was stated that the phenomena which disappear under these circumstances are probably hysterical.

Wildermuth expressed himself as a strong believer in the diagnostic value of bromides. Whenever a case of epilepsy will not yield to bromides he suspects either a hysterical element or organic brain-lesion. The prognosis of epilepsy of children is not so bad. Wildermuth has seen complete cures, the former patients becoming able to do military duty. This author held that the only form of real epilepsy not amenable to bromides is an unusual rapidly recurring petit mal (20-30 daily attacks). Friedländer described a bromide eruption bearing no resemblance whatever to bromide acne. Quczek held that bromide is of the greatest value in distinguishing between epilepsy and hysteria; he believed that the use of the drug is often perhaps the only means of distinguishing between these affections. In the further discussion of the subject of Fürstner's paper, Mayer reported two cases of status epilepticus successfully handled by bromide in enema, while Wildermuth praised hydrate of amylene in the status. Fürstner in conclusion stated that he employed naftalan with benefit in bromide acne. CLARK.

THE TREATMENT OF HYSTERIA. R. E. Wrafter (Indian Medical Record, January 10, 1900).

The author's experience in India leads him to the following general conclusions. The first object is the relief of the patient during the actual paroxysm. If the attack is severe and protracted, care is to be taken that the patient does not injure herself. Cold water to the face, fresh air, rubbing the temples with spiritus aetheris comp., are often effectual to stop the paroxysm. It is usually impossible to give medicine by the mouth as the teeth are either tightly shut or the patient cannot swallow. Should it be possible, however, it may be advisable to give internally a mixture of spiritus chloroformi, spiritus aetheris comp., and aqua camphorae together with tinct. lavendulae comp. If this cannot be done, an enema of ol. terebinthinae or tinct. asafoetida may be employed to cut short the attack. In the interval between attacks, internal medicine to allay the excitability of the nervous system and to improve digestion may be of advantage. In plethoric patients, cathartics, low regimen and regular exercise are useful. In languid patients, tonics are indicated. Myrrh, bromide of potassium and cinchona, a course of mineral water, daily exercise, tepid bathing and generous diet will prove very efficacious as adjuncts in the treatment. Aromatic distilled waters are useful as carminatives where flatulency is present. Hysterical patients should never be roughly treated and above all, the physician must always treat and remedy other diseases. Some management of the mind looking to its greater stability is also very useful when properly car-

ried out. A woman can often by well-timed firmness on the part of the practitioner, resist the tendency to an attack. In cases of hystero-epilepsy of the ovarium type, the attacks can be arrested at any stage by forcible pressure on one or the other ovary. It is extremely difficult, however, to recognise these cases and to distinguish them from pure epilepsy.

JELLIFFE.

UEBER EINIGE NEUERE ARZNEIMITTEL UND METHODEN ZUR EPILEPSIE BEHANDLUNG (On New Remedies and Methods in the Treatment of Epilepsy). Landenheimer (Die Therapie der Gegenwart, July, 1900).

Landenheimer says there may be 50,000 epileptics in Germany reckoning one per 1,000 population. The percentage of epilepsy in various countries is estimated from 0.2% to 6 per 1,000. Bromine furnishes a substratum for all attempts to treat epilepsy. There can be no doubt that it cures some cases and improves others. On the bromide basis we have various superstructures erected, such as the modified bromides, the combined bromide treatment, and finally substitutes for bromides. Bromides of course act by depressing the excitability of the cortico-motor centers, and this depressant action can terminate in paralysis (bromism). Bromism is produced by cumulative action while as a rule the halogen compounds are rapidly eliminated by the kidneys, the bromides constitute a marked exception, and the author's researches have shown that a large amount of these salts are retained in the tissues. In one patient only about one-tenth of the injected bromide was eliminated at first, although the amount gradually increased until after three or four weeks, the injected and eliminated amounts were equal. Thus after eight days at least 45 gm. of sodium bromide must have been retained in the tissues. This fact may explain why the action of the bromides, good and bad, is not noted earlier. If the saturation point can be reached without causing intoxication, a permanent tolerance may be established, but if intoxication is reached before the saturation point, conditions are favorable for bromism. Thus clinically we often see bromism set in early, even when the dose is not an increasing one; on the other hand, the drug may be used for months and even years, without any evidence of intoxication. Mild bromism, as indicated by acne, weariness and digestive disturbances is not a contra-indication to the continuance of the remedy. Extinction of the pharyngeal reflex, once looked upon as being the danger signal, is now known to be uncertain. More trustworthy is the abolition of the corneal reflex, and when this occurs on two consecutive days, Ziehen always interrupts the treatment. As a rule, in general practice the epileptic is given too little bromide. Specialists often see prescriptions by general practitioners in which the daily dose of bromides is 2 to 4 gm. This quantity is rarely sufficient to suppress epilepsy. The initial dose may be small but the amount should be rapidly increased. Many prefer beginning with a large dose (10 gm.), and cautiously reducing to an amount which will control the seizures. Voisin and Féré believe it advisable to continue bromization after apparent cures. The author approves of this plan for a year or two, 2 or 3 gm. daily. The bromide treatment is not suitable outside of institutions unless small doses do the work. The author believes in a very free dilution of the bromides, hoping thereby to avoid gastric disturbances. After trying every species of bromide, Landenheimer is unable to say which is the better, and thinks it best to stick to the old time bromides (potassium, sodium, ammonium).

The newer and more expensive kinds may be better in certain cases, but exact indications cannot be formulated. Personally the author favors sodium bromide on theoretical grounds.

Bromalin contains less than half as much bromine as does sodium bromide, so necessitating large doses. Its taste is disagreeable. It must be admitted that it has less tendency to produce bromism than the bromides proper, but it can set up a profuse, persistent diarrhea. Landenheimer would employ it in the milder cases of epilepsy and in those who are predisposed to bromism. Bromopin is rather easy to take, is sufficient for mild cases, and has much less tendency to cause bromism than the bromides. It can be used subcutaneously; it can also be given as cod liver oil to patients who fear bromine.

With regard to the Flechsig method, a considerable literature represents divided views. In the last five years Landenheimer has seen a great many divided cases treated in this manner. His impression supported by that of Ziehen and Binswanger is that the Flechsig treatment can cure many cases which are refractory to ordinary bromide management.

The Moeli bromide-atropine method has not been sufficiently employed in Flechsig's clinic to arrive at definite conclusions. Combinations of bromides with adonis vernalis and digitalis, do not appear to have been used at this clinic. Credit is given to Seguin for the value of his suggestion to combine chloral with bromides when the latter are badly borne. Contrary to what is usually held in this country the author believes that chloral cannot be used persistently. Piscidia erytheina is certainly an anti-epileptic, and may replace the bromides in mild cases, while the two remedies may be combined in the same formula. Amylene hydrate may be placed in the same category as chloral to which it is superior in not prejudicing the heart's action. The author recapitulates that no plan of treatment has yet been devised which can fully replace the bromides.

CLARK.

BROMIDE TREATMENT OF THE OPIUM HABIT. A. Church (N. Y. Medical Journ., June 9, 1900).

The author gives a report on two patients treated by the method of bromization, one a physician under his own care, gave very alarming symptoms of cardiac and respiratory disturbances during the treatment and seemed unlikely to recover. A slow but most satisfactory convalescence followed without any further desire for morphine and there was marked improvement in the general condition. The other patient developed an exacerbation of a chronic nephritis and died of uremia on the twelfth day. Enormous doses of sodium bromide were used by mistake in this latter case and probably induced the nephritis.

One hundred and twenty grains of sodium bromide are given every two hours in three ounces of water until one ounce of bromide is given on the first day. On the second day a smaller quantity is given and this may be sufficient or the doses may be continued on the third day. If the patient becomes comatose the administration may be ceased after twenty-four hours. The drug acts in a cumulative way and the sleep tends to deepen oftentimes for forty-eight hours after the drug is stopped. It is said that the intense suffering, vomiting, sneezing, and cravings for morphine, which usually mark its sudden withdrawal, can be avoided by this method. The tendency to relapse seems to be reduced to a minimum, but the method is not without danger.

JELLIFFE.

CHLORALAMID. S. V. Clevenger (Medical News, December 8, 1900).

The author holds that chloralamid or chloralamid-formamidatum is superior as a "nutrient hypnotic," as it sustains the heart, causes no irritation of the mucous membrane, and leaves no stupefying after-effects as is so often seen in the use of bromides, chloral hydrate and other hypnotics and analgesics. Nocturnal epilepsy, especially if associated with somnambulism, is markedly benefited by this drug. Chloralamid has proven efficacious as a hypnotic in melancholia, toxemia, neuroses and psychoses, and traumatic neurasthenia. The pain of locomotor ataxia and inveterate neuralgia has also been mitigated; in these cases as an analgesic, chloralamid is superior to morphine.

During its employment in the Hamburg asylum for the insane, for the period of forty months, the mortality fell from 6 in 160 to 5 in 519 in uncomplicated delirium tremens cases. Owing to its stimulating influence, chloralamid has failed in the excitement of mania and parietic dementia. Its after-effects of stupor, headache, exhilaration and epistaxis that have been reported as attending its use, are coincidences rather than results. The dose of chloralamid is 15-60 grains one-half hour before retiring. Sleep in those suffering from insomnia, has been secured on the subsequent night after one dose. As there is no liability of addiction, and no serious consequences, the blandness and efficiency of chloralamid should replace the danger of chloral hydrate, especially in insane asylum practice.

TREMAINE.

OPERATION FOR EXTIRPATION OF GASSERIAN GANGLION. H. Cushing (Journ. American Medical Association, Vol. 35, 1900, p. 1,100).

The author publishes an operation for removing this ganglion which necessitates less manipulation, causes less hemorrhage, and removes the entire ganglion more easily than other methods.

A horseshoe incision is made with a base of 4 cm., on the zygomatic arch, convexity slightly higher than the pinna of the ear. This skin-flap is first turned down exposing the temporal fascia well down to its attachments to the malar bone and zygoma. An incision is made, through the periosteum, along the outer surface of the zygomatic arch, which is raised from the upper portion, leaving intact the masseteric attachments. The ends of the zygomatic arch are then cut by bone forceps. An incision through the temporal fascia and muscle is then made concentric with the skin edge, and the soft structures retracted well down from the temporal fossa which is exposed. A small opening is made with a gouge through the most prominent part of the great wing of the sphenoid and is enlarged by the rongeur to 3 cm. The middle meningeal runs on the dura across the opening, and both may be lifted from the middle fossa as far as the foramen ovale. Between the firm attachments of the dura to the foramen ovale and rotundum the envelope of the ganglion may be split, and by careful dissection its entire upper surface exposed, care being used not to disturb the ganglion itself since its blood-supply comes mainly from below. The ganglion is then liberated by blunt dissection from the base of the skull, the second and third branches, and, finally, the sensory root and first division are freed, when the ganglion may be removed entire by cutting the three branches and evulsing the sensory root. By clinging close to the sensory root the operator is less liable to damage the cavernous sinus or the sixth nerve. The brain is allowed to fall back into place, and the muscle, fascia and skin sutured.

JELLIFFE.

ACTION OF GELSEMIUM ON THE CENTRAL NERVOUS SYSTEM. R. H. Whitehead (N. Y. Medical Journ., Aug. 18, 1900).

Since the Nissl method for staining nervous tissues has come into general use by histologists and pathologists, the action of numerous drugs upon the nervous system has been microscopically investigated. The author has reported on the changes which he has observed in the cranial nerve nuclei after poisonous doses of gelsemium. Acute poisoning of a two-months'-old rabbit resulted in "initial chromatolysis." The Nissl bodies were abnormally large and indistinct. The achromatic spaces were smaller and often faintly stained and since the chromatic bodies were not deeply colored the cell-body had the appearance of a spongy fibroid mass with but little achromatic substance. In cases of slow poisoning the Nissl bodies were few in number, large in size, and situated principally around the nucleus. In some cells they also seem to be much fragmented. He believes that toxic doses of gelsemium produce chromatolysis of the cells which constitute the nuclei of the motor cerebral nerves, and that the alterations are not specific, but are very similar to the changes produced by other toxic substances on the motor cells.

JELLIFFE.

PATHOLOGY.

BEFUNDE BEI EINSEITIGER KLEINHIRNATAXIE MIT GEKREUZTER LÄHMUNG (Findings in a Case of Unilateral Cerebellar Ataxia, with crossed Paralysis). G. Anton (Jahrbücher für Psychiatrie und Neurologie, Vol. 19, 1900, p. 309).

A case with autopsy, which throws some light on the much-discussed question of cerebellar ataxia in regard to the basis of its condition, whether it is a simple weakness of motion or a disturbance of muscular co-ordination and how much weight should be given to the asthenia and how much to the ataxia. The case was one of a disturbance of motility, having for a basis a cerebral and a cerebellar disease in the same individual. A man fifty-five years old, non-alcoholic, had been suffering for some time with dizziness, palpitation, headache, etc. After walking in the sun he was suddenly attacked with weakness and trembling of the lower extremities. He was brought into the hospital in an apathetic condition, speech indistinct and slow and difficult to understand. The left upper and lower extremities extremely paretic, left facial paresis, especially marked in the muscles around the mouth, eye and forehead anesthetic on the left side, muscular sense on this side affected. Knee-jerk much diminished on left side, plantar reflex on both sides active. Muscle tonus on both sides normal. Before death, which took place seven months later, from exhaustion, the pupils did not react to light, the tongue was paretic, ataxia and convulsive movements also on the right side. The macroscopic findings are briefly as follows. The vessel walls of the carotid system showed moderately thickened coats. The right arteria cerebri posterior, a few mm. from its branching from the basilar, showed the presence of a thrombus, about 1 cm. in length. The neighboring arteria cerebelli superior likewise thrombosed from its point of branching. Softening and resorption of the medial aspect of the right temporal brain could be seen corresponding to the distribution of the thrombosed vessels. The surface of the right cerebellar hemisphere was softened as far as the white substance. A portion of the right gyrus hippocampi and the occipitotemporalis and a portion of the fourth parietal convolution were sof-

tened. Ischemic softening of the posterior knee of the capsula interna and of the ventral portion of the corpora quadrigemina were present. The brain and cord, studied in serial sections microscopically, gave in brief the following results: The softening observed macroscopically was microscopically demonstrated, as also the inferior lip of the calcarine fissure at the gyrus lingualis. As a result of the softening of the Ammonshorn and the fascia dentata the fornix in its greatest extent showed descending degeneration of its fibers. Secondary degeneration was found in the pyramidal tract and in the foot of the cruri cerebri the tract joining the parietal lobe with the cerebellum. The latter degeneration could be followed through the pons to the hemisphere of the cerebellum of the other side. The medial bundle of the foot of the crura remained unaffected. The degeneration was especially well marked in the parietal lobe. A portion of the lateral ventricle wall, the projection strata of the parietal lobe to very nearly the level of the incoming fibers of the commissura anterior were degenerated. The degeneration of the projection system in the parietal lobe was in continuity with the degenerated portion of the corpora quadrigemina. In the medulla the middle and outer portion of the "Strichkorper" and the external and internal arcuate fibers, the cerebellar olivary tract, including the external region of the right and the internal hilus of the left olive were degenerated. In the cervical cord the pyramids, the territory of the periphery were clearly degenerated. As a result of the cerebellar defect, a descending degeneration of the lateral peripheral fibers of the same side of the cord and to a less extent on the other side, were found degenerated. On the same side the Clarke cells were atrophied and in part absorbed. The relation of the clinical symptoms to the anatomical condition is stated as follows: The left-sided paresis is an evident result of the disturbance to the internal capsule and the degeneration of the pyramids, in the same way the loss of cutaneous and deep sensibility is due to the break in conduction in the fibers of the posterior knee of the internal capsule. The ataxia and the tremor, suddenly appearing on the right side, before this intact, are due in all probability to a fresh injury of the cerebellum, the attack being ushered in by vomiting and vertigo. SCHWAB.

NATURE ET TRAITEMENT DE LA MYELITE AIGUE (Nature and Treatment of Acute Myelitis). G. Marinesco (Nouvelle Iconographie de la Salpêtrière, 13th Year, No. 6, Nov.-Dec., 1900, p. 561).

Every acute myelitis is characterized by multiple processes of reaction from the side of the vessels, interstitial tissue and nerve cells. The two first constitute the active processes of multiplication and proliferation, giving rise in this way to more or less extensive foci and to nodules.

The phenomena of reaction on the part of the nerve cells lead rapidly to their degeneration. The apparent lesion which is commonly seen in every acute myelitis is hemorrhagic softening, a lesion which is the consequence of circulatory disturbances caused by toxic and infectious agents, the only factors which cause an acute myelitis.

Following the extent and the topography of these vascular lesions, it can be admitted with Goldscheider and Leyden that there are several varieties:

Transverse myelitis, diffuse ascending and descending myelitis, disseminated myelitis, and poliomyelitis.

The vascular and infectious nature of this last has been brought

to light by Pierre Marie, whose ideas on this subject Marinesco fully accepts.

The infectious and toxic nature of acute myelitis admitted by Pierre Marie has actually been demonstrated by pathologic examination and by bacteriologic and experimental researches. I have had occasion to examine six cases of acute myelitis, and in two of these I have determined the presence of streptococci; in a third the pneumococcus; while a fourth showed a microbe resembling the bacillus of malignant edema. In the fifth neither lumbar puncture nor histologic sections showed the presence of any organism.

This latter is no proof against the infectious nature of myelitis, because experimental researches have shown that the organisms disappear from the cord at the end of a few days. Thus in my fifth case, in which the myelitis had begun acutely, the patient did not die until three months after its first appearance. In the sixth case it was a question of a myelitis, which I have described for the first time, in a disease of young dogs.

The myelitis, or rather the meningo-myelitis, which I have been able to diagnose in this case, presents itself more in the form of separated foci, following more particularly the course of the anterior and posterior root arteries. In a number of cases of infantile paralysis which I have had occasion to study, the myelitic foci were situated always in the course of the ramifications of the artery of the anterior fissure. Sometimes all these ramifications are attacked and the foci of poliomyelitis involves the anterior horn in its totality. At other times it is only the artery which nourishes the antero-external group, the middle group, and very rarely the antero-internal group, which is attacked.

I have never found organisms in the foci of infantile polio-myelitis which could easily be foreseen.

Landry's ascending paralysis is most often dependent upon a diffuse ascending and descending infectious myelitis. My own studies, together with those of Pierre Marie, Oettinger, the case of Ballet and Dutil, have shown this. Sometimes it depends upon a polyneuritis (Dejerine, Kahler, Pitres, Vaillard and Raymond). I have myself seen a very remarkable case of this kind.

The majority of microbes are capable of producing myelitis. The first to be cited are the streptococci, the agent of rabies, the pneumococcus, and other organisms. I have been able to produce myelitis experimentally in four different ways:

(1) By the injection of an organism in a blood vessel distant from the cord. (2) By a blood vessel supplying it directly, following the procedure of Lamy. (3) By the nervous path (innoculation in the sciatic nerve); and lastly by the introduction of microbes in the spinal canal. The results are variable, depending upon the operative method which is followed. The injecting of organisms by a vessel distant from the cord produces rarely a myelitis, and when it does it is not very marked. The same injection into the arteries of the cord causes a polio-myelitis. The innoculation in the sciatic nerve causes a meningo-myelitis, more marked on the side of the nerve injected. While the injection into the spinal canal occasions a bilateral meningo-myelitis, very considerable at the level of the injection and diminishing in the ascendent and descendent sense. According to the vascular system affected, there can be observed from these experiments a myelitis, a disseminated myelitis, the polio-myelitis in foci, analogous to that of infantile paralysis.

The appearance of the phenomena characterizing myelitis can be

found by freezing the vertebral column, by local traumatism, etc. There are in all myelitis two leucocytic reactions: (1) A precocious reaction of defence, which consists in the migration of mononuclear and polynuclear cells, a reaction whose purpose is to vanquish the organism. (2) A tardy leucocytic reaction, the purpose of which is to carry away the products of degeneration resulting from the myelitic process.

As a specific treatment I have employed the serum of Mamorek in myelitis due to the streptococci, but without definite results. I have found the same lack of success in the employment of methylene blue in two cases of meningo-myelitis. Against the violent pains which one of my patients experienced I have used intradural injections of cocain with a certain degree of success.

SCHWAB.

PSYCHIATRY.

FRIEDRICH NIETZSCHE: A STUDY IN MENTAL PATHOLOGY. William W. Ireland (The Journal of Mental Science, Vol. 47, 1901, p. 1).

The author has here given another interesting pen picture of mental malady in a man of mark. They are always well done and the delineation of Nietzsche's gradual mental disintegration is fascinatingly portrayed. It would be impossible to summarize the entire paper, it should be read through, but, Dr. Ireland says, in one place, that the unfortunate man was born with a hereditary tendency to an abnormal mental action; in infancy he was backward; in childhood he was shy and solitary; in youth he took no pleasure in the sports and amusements of young men, but he was quick at book-learning and literary aptitude with a love for straying away from beaten paths. A careful education by a good mother helped to keep down his lower propensities, and the early dignity of a responsible position and academic surroundings made him give hostages to good behavior. But he soon showed an irrepressible combativeness and an excessive self-conceit. The connection of his nervous sufferings with his mental derangement is not clear, but no doubt these exasperated him and increased his discontent with life. His was the condition described as *folie de doute*, anguish of doubts. The restless working of his intellect was always accompanied by exaltation of the affective faculties, the power of correct reasoning slowly decayed and the bonds of restraint became weaker. His aggressiveness and egotism became more and more prominent. "The peculiarity of his insanity seems to have been that while he retained sufficient powers of self-restraint to refrain from breaking through outward rules of conduct within his limited sphere of intercourse with older men, he gratified his extravagant propensities by writing reckless and provocative books against the beliefs which were most cherished by those amongst whom he dwelt."

JELLIFFE.

BEITRAG ZUR KENNTNISS DER TYPHUSPSYCHOSEN (Contribution to the Knowledge of Psychoses in Typhoid Fever). Deiters (Münchener med. Wochenschrift, 1900, xlvii. 47, p. 1623).

The author gives the history of two cases, which he thinks belong to the form of "initial delirium" in typhoid described by Kraepelin and by Aschaffenberg. They occurred in a brother and sister from a locality in which typhoid was prevalent, and having a strong hereditary predisposition to insanity.

Case I.—The brother, twenty-four years old, was taken sick with fever and vomiting. These symptoms subsided after two days, but

he then became restless and violent, slept little and refused food. Brought to the asylum he was confused, violently resisting all manipulatives. The morning temperature next day was 38.1°C ., evening 38.8°C .

Physical examination was negative. Next day he was slightly clearer; temperature A.M., 37.3°C .; P.M., 37.7°C . During the next few days the temperature ran between 38° and 40° . The patient became quieter and clearer, but seemed exhausted, lacrymose. The fever slowly fell. In about two weeks he was fever free, and outside of some dulness and stupidity which was said to be natural to him, was mentally normal. At no time were there any definite physical symptoms of typhoid, but the Widal test revealed it positively.

Case II.—The sister, seventeen years old, took sick four days after her brother. She was restless, confused, talked incessantly, refused food, and was unclean, and ran around at night. Upon being brought to the Asylum she was much confused, excited and restless, had to be fed (with a spoon). Physical examination the next day was negative, her temperature was normal. She continued restless and excited and slept but little during the next three weeks. She then became exhausted and stuporous, and her temperature was found to be elevated, going up to 39.1°C . that evening. Physical examination disclosed nothing beyond slight dulness and weakened breathing over the right base. Her bowels moved normally. A few days later she had severe epistaxis, her urine contained traces of albumin and gave the diazo-reaction. After more than two weeks diarrhea set in, and her abdomen became sensitive to pressure. Spleen not palpable. The fever gradually became higher and was but little controlled by baths. Her mental condition had much altered. She now lay stupid and apathetic, was childish and lacrymose. Her temperature fell suddenly to subnormal, but went up again to 40.9°C ., there was diarrhea with dark, offensive stools, the pulse was rapid, there was great restlessness and death occurred the following night. The autopsy disclosed nothing of importance in brain or cord. On the right side fibrinoid pleurisy, two pneumonic foci, spleen much enlarged, mesenteric glands swollen. In both small and large intestine were ulcers presenting the usual characteristics of typhoid ulcers. Peyer's patches swollen. The author regards the strong hereditary predisposition to insanity as being the chief cause in the production of a clinical picture differing so widely from that usually presented by typhoid.

ALLEN.

Book Reviews.

ETUDE SUR LES HÉMATOMYÉLIES. Par le Dr. Jean Lépine. Ancien Externe lauréat, Ancien Interne des Hôpitaux de Lyon. A. Storck et Cie., Lyon. Masson et Cie, Paris.

Studies of this type are particularly welcome at this time when a thorough revision of the work of the pathology as well as of the histology of the spinal cord is in progress.

The monograph might have been of more use to the specialist if the author had limited his discussion somewhat, yet, notwithstanding the fact that he has endeavored to bring together the entire literature of hemorrhage of the spinal cord, he has performed a signal service for neurology in the grouping together, analysing and composing the many contributions which have been made to the subject.

It is impossible to analyse a study of this kind and to cavil at the fact that we note many omissions in the author's bibliography of excellent work done by American observers would seem to overlook his introductory announcement that the work should not be taken as a complete exposition of the subject.

It certainly is the best collected piece of work on the subject of hematomyelia thus far given to the profession and deserves recognition as such.

JELLIFFE.

STUDIES IN THE PSYCHOLOGY OF SEX. The Evolution of Modesty. The Phenomena of Sexual Periodicity. Auto-Erotism. By Havelock Ellis. The F. A. Davis Company, Philadelphia, New York, Chicago.

In the publishers' announcement of this book it is stated that the book will be sold only to physicians and lawyers. Why to lawyers it is difficult to imagine. The three subtitles of the volume explain very clearly and concisely the questions considered and these are not such as would be of use even to criminal lawyers. The only point which might possibly be of value to a lawyer in a criminal case is the opinion of the author, and the evidence presented, as to the effects of auto-erotism. He does not believe that masturbation leads to insanity or other dire results unless practiced to excess, and even then seldom to insanity unless there is an hereditary taint. On the other hand, he is inclined to think that masturbation practiced in great moderation often is of benefit to certain individuals by reason of its sedative effect. He cites numerous instances in support of this opinion, and gives a historical sketch of the views held on this point.

Ellis has apparently gone over the literature of his subject very carefully and studied the questions involved very thoroughly. The volume is of interest to physicians, because it is a beginning of study in the right direction, whereby they may intelligently treat those irregular manifestations of sexual life which often come under their care and observation.

BONAR.

SÉMIOLOGIE DU SYSTÈME NERVEUX, par J. Dejerine, Professeur agrégé à la Faculté de Médecine de Paris. Médecin de la Salpêtrière. Reprint from volume five of the *Traité de Pathologie Générale*, edited by C. Bouchard. Masson et Cie, Paris, 1900.

When the reviewer has nothing but praise to bestow upon a work his task is an easy one. Professor Dejerine has had an extensive experience in the clinical, as well as pathological, manifestations of nervous diseases at the Bicêtre, the Salpêtrière, and elsewhere, and we should not expect a book by him on the symptomatology of these diseases to be in any way of inferior merit. If anyone begins the reading of this volume in the expectation of finding simply well known facts presented in a new form, he will be agreeably surprised. Many of the statements of course are not new, but in every chapter the author's individuality is very evident. The writing of a text-book is not so easy as some may imagine, provided of course it is well done, as the author's knowledge of his entire subject is revealed in a text-book.

The method of treating nervous diseases from the standpoint of symptomatology is unusual, and it is more common to discuss each disease with its symptoms separately. Professor Dejerine's work forms a part of the fifth volume of the "*Traité de Pathologie générale*," and apparently is not sold separately, which is to be regretted. As it consists of 810 pages and is in the last part of the fifth volume, only about 358 pages can be devoted to the six chapters on the semeiology of the liver, pancreas, genital organs, etc. The portion on the semeiology of the nervous system contains the disturbances of intellect, of language, of motion: the topography of the paralyses and muscular atrophies; the semeiology of the hand, foot, face, of attitude, gait and deviations of the vertebræ, and of mechanical and electrical reactions of the nerves and muscles; the disturbances of sensation; the semeiology of the reflexes; the visceral and trophic disturbances of nervous origin, and the semeiology of the visual apparatus in the diseases of the nervous system. The scope of the work is therefore very extensive.

Professor Dejerine's views on aphasia are well known, but it is interesting to have them in the condensed form given by himself. He believes that cortical motor aphasia without any sensory aphasia does not exist. The ability to speak and write is most impaired in a lesion of Broca's area, but all forms of language are affected by such a lesion. The visual, auditory and motor images of words are necessary for language, and destruction of any one of the centers in which these images are stored impairs the function of the other two, although the function of the center directly injured is most affected, and agraphia exists after an injury of any one of these three centers. To prove that a graphic center exists, Professor Dejerine demands the publication of a case in which agraphia has been the only clinical phenomenon, and therefore not associated with disturbance of intelligence, of motor speech, or of reading or hearing; and in which a necropsy has shown the presence of a destructive lesion localized to the foot of the second frontal convolution. It is needless to say that such a case has not been reported.

Professor Dejerine does not accept the view that in hemiplegia certain groups of muscles in the paralyzed limbs are especially affected (Wernicke, Mann), but believes that all the muscles of these limbs are equally paralyzed, and those which appear less so are the muscles that normally are the stronger. It is an interesting observation, and probably one that every neurologist will confirm, that

in hemiplegia the implication of the so-called sound side is much more noticeable in the lower limb than in the upper. This seems to be an evidence that each side of the cerebrum innervates both sides of the body, especially those muscles that commonly functionate together. Arthropathies in hemiplegia are uncommon, and possibly unknown to some, but when they do occur they are supposed to be of rapid development and are of unknown origin, as traumatism and immobility of the limb do not offer sufficient explanation for them. They are regarded by some as of trophic or infectious origin. Brachial monoplegia as a result of neuritis is rare, and yet Dejerine has observed two cases of this form of paralysis, and in one recovery was complete after seven months, and in the other after ten months.

Many of the cases described in this work are very rare, such for example as cases of amyotrophic lateral sclerosis of scapulo-humeral type, of Jacksonian epilepsy produced by a tubercle in the white matter of the brain a centimeter below the cortex, of acute poliomyelitis with atrophy in the proximal ends of the limbs, of neuritis of the external popliteal nerve with integrity of the anterior tibial muscle, of acute poliomyelitis with wrist-drop, of progressive spinal muscular atrophy beginning with paralysis of the extensors of the hand, of neuritis confined to the ulnar nerve and the result of typhoid fever or grippe, of contracture of the fingers and thumb within the palm of the hand in the form of a fist in paralysis agitans, of pressure palsy of the musculo-spiral nerve with microscopical examination of the nerve—the only case with necropsy on record—and of other interesting alterations too numerous to mention. This work is of great value because it is written by a man of experience who is both practical and scientific. The numerous and excellent illustrations are well worthy of careful examination.

SPILLER.

DIE MIMIC DES MENSCHEN AUF GRUND VOLUNTARISCHER PSYCHOLOGIE. By Henry Hughes. Johannes Alt. Frankfort, A. M.

The art of pantomime has claimed the attention of all men from the days of the earliest Greek drama, but to Darwin, in large part at least, may be ascribed the first fundamental studies on the psychology of the emotions as evidenced by muscular action. Whatever fault present-day psychology may find with his expression of the emotions in man and the lower animals, it cannot be gainsaid that his researches were far reaching and important.

The present work is a most interesting one. It discusses very logically and thoroughly the relations of voluntary movements more particularly of the facial expressions to the individual psychology. Reflex movements and general mass movements are not ignored, however. The discussion of the motions of the scalp, the eyes, the nose, ears, mouth and head are very thorough, the author giving a thorough résumé of the scientific study of physiognomy. Following the discussion of the movements of the facial muscles those of the neck, back, upper and lower extremities are studied in detail. The final section of the work endeavors to correlate these movements with various psychical states such as impulse, the emotions, attention, feeling, negation and acting.

The work is to be heartily recommended as thoroughly scientific in its mode of treatment of the subject and sufficiently explicit to offer many suggestions to the keen student of the interpretation of the psychical activities of others.

JELLIFFE.

Notes and News.

THE SUM of \$60,000 has been appropriated for furnishing the new Eastern Maine Insane Hospital at Bangor.

DR. EUGENE SMITH has resigned the position of Physician in the Danville, Pa., Hospital for the Insane.

DR. DAVID N. JONES, of Gaylord, Minn., has been made a trustee for the State Hospitals for the Insane.

DR. HALLIE D. EWING has been reappointed second assistant at the Asylum for the Chronic Insane at Hastings, Neb.

DR. F. F. TEAL, of Omaha, has been appointed superintendent of the State Hospital for the Insane at Norfolk, Neb.

DR. S. WEIR MITCHELL left Philadelphia about the middle of March for Vancouver *en route* to Japan. He will return in June.

DR. FRANZ NISSEL, of the Nissel method, has been promoted to the position of associate professorship of psychiatry at Heidelberg.

DR. CAROLINE B. CULVER, Sandusky, Ohio, has been appointed one of the medical staff of the State Hospital for the Insane at Massillon.

DR. JAMES W. SMITH, of Pleasant Hill, Mo., has been appointed President of the Board of Managers of the State Hospital for the Insane, at Fulton, Mo.

MOUVEMENT PSYCHIQUE is the name of a new journal of hypnotism recently published in France. It is the official organ of the Paris Institute of Psychical Sciences.

DR. HERBERT N. MANNING has been appointed resident interne at the Washington Asylum Hospital, by the District Commissioners, in place of Dr. Melville A. Hays, who recently resigned.

THE WORCESTER, MASS., INSANE HOSPITAL, claims to be the first in the United States to be supported by state funds. During the past year the hospital has treated 517 patients.

DR. MYRTLE ALPIN, of East Highlands, formerly house physician at the Lane Hospital, San Francisco, has been appointed resident physician at the State Insane Asylum at Napa, Cal.

BILLS appropriating \$383,100 for the Illinois Northern Hospital for the Insane, at Elgin, and \$490,600 for the Illinois Southern Hospital for the Insane at Anna, have been introduced in the legislature.

FRANCIS R. PACKARD, of Philadelphia, has been appointed editor of the *American Journal of Medical Sciences*, in place of Dr. Alfred Stengel, who has recently resigned because of press of other matters.

SIX NEW NURSES, men of middle age, experienced in the care of the insane, have been appointed to duty in the insane pavilion of Bellevue Hospital. They are said to receive \$30 per week.

DR. E. L. BULLARD, of Waukesha, Wis., has been elected superintendent of the Mendota Insane Asylum, to succeed Dr. W. B. Lyman, of Eau Claire, who recently resigned to enter private practice.

A STATE SANITARIUM for the care and treatment of nervous diseases is the object of a bill recently introduced in the house of representatives of Michigan, asking for an appropriation of \$200,000.

THE COMMITTEE ON INEBRIETY, of the Indiana State Board of Medical Registration, at its recent meeting in Indianapolis, prepared a bill asking for an appropriation of \$100,000 to found a state hospital for inebriates.

DR. S. A. MERCER GIVEN, manager of the Burn Brae Sanitarium at Clifton, Delaware County, died during the last week of February. He had managed the sanitarium, which was founded by his father, since 1887.

A RECEPTION WAS TENDERED, at the close of the February meeting of the Philadelphia Neurological Society, to Drs. George L. Walton and Walter E. Paul, of Boston, who presented a paper on "Astereognosis" before the Society.

DR. HARMON, of Longview Asylum, Cincinnati, Ohio, and Prosecutor Hoffheimer, have arranged that no patients at Longview, who are sent to the hospital after being charged with murder, will be dismissed until the prosecutor has been properly notified.

THE ANNUAL REPORT of the Asylums of the province of Quebec, gives the total population in that province, in 1899, as 2,981, and the cost of maintenance \$314,157.48, both figures showing an increase over those of 1898. The three principal asylums are the Quebec City Asylum, the Verdun Institute and the Long Pointe Asylum. The percentage of cures in each of these three asylums is less than during the previous year.

DR. RICHARD JAMES DUNGLISON the author and editor of many medical works, among which was Dunglison's Medical Dictionary, recently died in Philadelphia of dropsy. He was the son of Professor Robley Dunglison of Jefferson Medical College, and graduated from that college in 1856. Dr. Dunglison was an acting assistant surgeon in the federal service from 1862 to 1865.

BOTH THE NEW YORK NEUROLOGICAL SOCIETY and the State Charities Aid Association have passed resolutions condemning any amendment to the state insanity laws, which would do away with the provision that the medical member of the commission shall have had at least five years' actual experience in the care and treatment of the insane.

IN THE REPORT of the Central Hospital for the Insane, at Indianapolis, Ind., the superintendent classifies the causes which led to the insanity of the persons committed during the year, and of the five hundred and seven nearly ten per cent. were made insane by reason of religious excitement. The report says that none of the latter was affected by hereditary insanity.

THE NINTH ANNUAL REPORT of the Massachusetts Hospital for Dipsomaniacs and Inebriates, at Foxboro, shows a notable increase in the number of patients treated and in the daily average present during the year. The reduction in the average weekly cost amounted to sixty-three cents, making the average cost \$4.67. There were 174 patients at the beginning of the year and 258 at its close.

PROFESSOR MELLER, of Kiel University, the renowned expert in mental diseases, as a result of autopsies made during five years on 300 suicides, states that he found the brains of 43 per cent. showed distinct malformation; 29 per cent. of the remainder were suffering at the time of their death from acute febrile inflammation, and 143 of the whole number had organs diseased by alcoholism.

A STATE COLONY FOR EPILEPTICS at Grand de Tour, in Ogle County, Illinois, is the object of a bill introduced by Representative David Hunter. To begin operations an initial appropriation of \$350,000 is asked. Admission to the proposed colony will be restricted very much as is admission to the Insane Hospital. Tuition, board and treatment are to be given the colonists by the State, and also clothing, if they are poor.

A BILL recently submitted to Congress, provides for the admission of the indigent insane to the Government Hospital for the Insane, on petition of the Commissioners of the District filed in its supreme court, which court shall issue a writ *de lunatico inquirendo*, whereupon the marshal shall impanel a jury from the jurors in attendance on the criminal courts, who shall perform this duty in addition to their duties in the criminal court.

ON THE RECOMMENDATION of the State Board of Charities of Pennsylvania, representative Calder, of Harrisburg, has introduced a bill in the house appropriating \$500,000 for the construction of a new Pennsylvania state lunatic hospital in Harrisburg. If the appropriation is made, it is hoped that the building now located there will be torn down and other buildings erected, two for destructive and dangerous patients, and two for convalescents. These buildings will require \$350,000 of this sum, and the balance will be used for additional buildings.

AMONG THE ITEMS in a bill presented to the legislature by the Wisconsin State Board of Control, are the following: \$100,000 for a building for the vicious and dangerous insane at the Northern State Hospital; \$7,000 for a water filter and pumps for the Northern State Hospital; \$5,000 for dining room and stage for the Northern State Hospital; \$3,500 for a sewage system for the Wisconsin State Hospital; \$6,000 for superintendent's residence at Wisconsin State Hospital; \$117,500 for new buildings for Wisconsin Home for Feeble Minded.

THE TRUSTEES AND THE SUPERINTENDENT, Dr. E. G. Carpenter, of the Columbus (Ohio) State Hospital for the Insane, have submitted their annual report to the Governor. A new building is recommended and seems to be needed as 1925 patients were treated during the year. The number of patients admitted during the past year was 488, while 460 were discharged, 184 of this number as cured. Dr. Carpenter recommends that the state establish an institution for the care of the criminally insane, who are now sent to the penitentiary.

DR. EDWARD D. FISHER will lecture on "Syphilis of the Nervous System," on April 10, at the New York Skin and Cancer Hospital. The lecture, which is free to the members of the profession, is one of a series on "Syphilis" given by members of the visiting and consulting staff of the hospital. The lectures are given at 4.15 P.M., on Wednesday afternoons.

ASILO CHAPUI is the name of the insane asylum in Costa Rica. It has accommodations for 150 inmates, and now contains 135. It is a state institution for the insane poor, but provision is also made for private patients of the first, second and third class. For the last eleven years the asylum has been under the care of Dr. Maximilian Carl Bansen. The hospital is surrounded by a magnificent flower and vegetable garden. Statistics for many years show that 50 per cent. of those admitted recover their mental equilibrium and of these only 2 per cent. have relapses.

A FAMILY, consisting of two brothers and a sister, living in New Haven, Conn., recently all became insane within one week. The sister became ill and acute mania quickly developed. A few days later the older brother suddenly lost his reason and began to rave, attacking the physician who was called in. Two days after this the younger brother developed acute melancholia. Although the family was considered well-to-do, no property has been found, and they will become charges of the State Hospital for the Insane.

PAGE

THE SUPERINTENDENT, Mr. Clouston, of the Royal Edinburgh Asylum, the largest in Scotland, in his annual report to the Board of Directors, ascribed the increased number of inmates to the excessive use of alcoholic stimulants during the recent period of brisk trade and high wages. He asserted that alcohol lunatics, judging from the admissions to the asylum, had increased from an average of 15½ per cent., covering the years from 1874 to 1888, to 24½ per cent. in 1900. He further declared that while a consumptive race might be cured in two generations it would take one hundred years to cure a drink sodden race.

THE ANNUAL CIRCULARS of the New York University are to be converted into a periodical, each number of which will contain, besides the circular matter, statements of recent progress in the University. This Bulletin will be issued twice a month, except from August to December. The present number presents the Annual University Announcement and General Catalogue. The second number will be devoted principally to the University Graduate School, the third number to the Summer School. The subjects of the remaining numbers will be announced hereafter. The Bulletin will be sent to all persons who have contributed to the University in any of its enterprises. Any resident of the United States may receive the Bulletin by sending his name and address to the Registrar of the University and remitting the subscription price of fifty cents.

THE BIBLIOGRAPHY OF AMERICAN NEUROLOGY AND PSYCHIATRY, on advertising pages xviii. and xxii., is the *only* one of the kind published. It is endorsed as valuable by numerous neurologists and alienists.

A REMARKABLE SOMNAMBULISTIC FEAT has been performed by an Illinois student. He was ill and wanted to go to his home twenty-five miles away, but did not think he could stand the long rough drive. One night after having retired and gone to sleep, he arose, dressed himself warmly, rode five miles in a street car, and walked the remaining twenty miles over rough roads to his home. In the morning he was found by his father, sitting, well wrapped up in carriage robes, in a buggy in the barn. He was as much surprised to find himself home, when his father awoke him, as his father was to find him in the barn.

THE ANNUAL REPORT of the asylums for lunatics and idiots of the province of Ontario, Canada, gives the asylum population as 5,512, with an average of 5,137 in daily residence. In 1900, the expenditure for maintenance in the province was \$634,977.42, the per capita cost being \$126.26. During the year 254 patients recovered, an increase of seven over the previous year, and 311 were discharged on probation, the average for the previous ten years being 255. The number of deaths was 269, a decrease of 23, as compared with 1899. Seventy-six per cent. of the population was employed, the percentage for the previous ten years being 75. The revenue from paying patients amounted to \$78,450.70, nearly \$4,500 above the average. Dr. Daniel Clarke, superintendent of the Toronto Asylum, contributed to the report a paper in which he combats the theory that insanity is purely a mental disease. He contends that it is always a bodily disease, and that mental or moral perturbations are occasions, not causes, of brain disease.

THE NEW YORK UNIVERSITY BULLETIN OF THE MEDICAL SCIENCES is the title of a Scientific Quarterly, the first number of which was published by the MacMillan Company, agents of the "New York University Press," early in March. This Bulletin of the Medical Sciences is edited, under the auspices of the New York University Medical Society, by an editorial committee consisting of B. Farquhar Curtis, M.D., Robert J. Carlisle, M.D., E. K. Dunham, M.D., John A. Mandel; and William H. Park, M.D. The Bulletin is to be devoted to reports of research and discovery in medicine, is to contain no advertisements, is not to make money, but, on the contrary, will cost the University money to publish. The engraving of a single page in the second number is to cost \$300. The first number includes articles on Gelatin as a Food-stuff, A Method of Determining the Existence and Degree of Acid Intoxication by Urinalysis, The Alloxuric Bodies, Effects of Cold on Bacteria, etc. The second number will contain, A Method for the Rapid Staining of the Malarial Plasmodium, Observations Contributing to Precision in the Use of the Widal Test for Typhoid, etc. The subscription price for the year is one dollar.

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TABLE OF CONTENTS ON PAGE ii and iv

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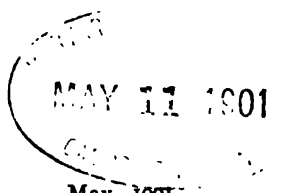
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THE
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Original Articles.

A STUDY OF THE CASES OF TABES DORSALIS IN PROF.
M. ALLEN STARR'S CLINIC, COLUMBIA UNIVER-
SITY, FROM JANUARY, 1888, TO JANU-
ARY, 1901.

BY ALLAN BLAIR BONAR, A.B., M.D.,

ASSISTANT IN NEUROLOGY, COLUMBIA UNIVERSITY, NEW YORK CITY.

The total number of cases which have applied for examination and treatment in the Neurological Department of the Vanderbilt Clinic, since its opening in January, 1888, to January, 1901, is 23,834. Of this grand total, 11,271 were males, and 12,563 were females. Boys under 13 years of age are included in the total of females as they are treated in the female room. As the examinations of all these cases were made by experts, specialists in nervous diseases, the diagnoses are correct, and the accompanying figures should have some importance. Among these patients were 286 cases of tabes dorsalis, and, therefore, it is seen that this disease constitutes only 1.2 per cent. of the whole number of cases. Of these 286 cases of tabes, 242, or 84.6 per cent., were males, and 44, or 15.38 per cent., were females. This shows a greater frequency of the occurrence of the disease in males than in females in the proportion of 6.5 to 1. In an analysis of 111 cases of

tabes in the Johns Hopkins Hospital, Thomas¹ found 97 males and 14 females, which give a proportion of 7 to 1, or 12.6 per cent. of female cases. Both of these proportions indicate the occurrence of the disease in females somewhat more frequently than the proportion given by Gowers,² which was 10 males to one female.

The relative frequency of the occurrence of tabes among nervous diseases in both males and females, is interesting as shown by the fact that only 242 out of 11,271 males, and only 44 out of 12,563 females were cases of tabes. In other words, only 2.147 per cent. of 11,271 cases of nervous diseases in males, and only 0.35 per cent. of 12,563 cases of nervous diseases in females were tabes dorsalis.

The age of onset was noted in all but 37 of the 286 cases. Referring to Table I., it will be seen that in 40.16 per cent. of those in which it was noted, the age of onset of the disease was between 30 and 40 years; in a little over 32 per cent. it was between 40 and 50 years; in 17.26 per cent. it was between 20 and 30 years, and in 10 per cent. it was over 50 years. But no cases are recorded in which the disease began after 60 years of age. Thirty-eight per cent. of Thomas' cases began between 30 and 40 years, 40 per cent. between 40 and 50 years, 14 per cent. after 50 years—one case as late as 66 years of age—and only 7 per cent. before 30 years. His youngest case was 25 years of age, and his oldest 66 years at the onset of the disease.

TABLE I. AGE AT ONSET.

Between 10 and 20 years,	1 case.
Between 20 and 30 years,	43 cases.
Between 30 and 40 years,	100 cases.
Between 40 and 50 years,	80 cases.
Between 50 and 60 years,	25 cases.
Not stated in	37 cases.

While there is still a difference of opinion as to the rôle which syphilis plays in the etiology of the disease, whether

¹Thomas, H. M.—"An Analysis of the Cases of Tabes in the Johns Hopkins Hospital and Dispensary from Its Opening in May, 1889, to December, 1898." *Bulletin of Johns Hopkins Hospital*, Vol. 10, 1899, p. 51.

²Gowers.—"Diseases of the Nervous System." Vol. 1, p. 399.

it plays a direct etiologic part or simply prepares the tissues for the onset of tabes by weakening them and bringing about a susceptibility to the disease, the weight of opinion leans toward the conclusion that tabes is a post-syphilitic disease. At any rate, there is no doubt but that syphilis is an important factor, either direct or indirect, in the causation of tabes. In our 286 cases a well-authenticated history of syphilis was present in 166 cases, or a little over 58 per cent., and was absolutely denied or absent in only 88 cases, or 30.77 per cent. In 32 cases, or a little over 11 per cent., there was some doubt about the occurrence of syphilis, either because the patient, while denying the disease, gave some history or presented some symptoms which made its occurrence more than probable, or because some indefinite history of a sore, or an eruption, etc., prevented the examiner from entirely ruling out the disease. Thus there was only 30.77 per cent. of these cases absolutely free from the presence or suspicion of syphilis. This gives about 70 per cent. of the cases as having, either positively or probably, had syphilis, which is a small percentage as compared with the results of the investigations of Fournier,³ who found syphilis in 91.26 per cent.; Erb,⁴ who found it in 88 per cent.; Rumpf,⁵ who found it in 90 per cent.; Althaus,⁶ who found it in 86.5 per cent.; Gowers,⁷ who found it in 80 per cent.; Strümpell,⁸ who noted it in 90 per cent. On the other hand, Thomas found positive syphilis in only 42.1 per cent. of his cases, and possible syphilis in 63.1 per cent. These latter figures are still smaller than the percentage presented here.

In those cases in which syphilis had been undeniably present, it will be seen in Table II. that the time between the oc-

³*Fournier*.—"De l'ataxie locomotrice d'origine syphilitique." *Annales de dermatologie et de syphiligraphie*, 2d Série, Tome iii, 1882, p. 19.

⁴*Erb*.—"Tabes und Syphilis." *Centralblatt für die medicinischen Wissenschaften*, 1881, xix., No. 11 u. 12.

⁵*Rumpf*.—"Syphilitischen Erkrankungen des Nervensystems." Wiesbaden 1887, p. 368.

⁶*Althaus*.—"Ueber Sclerose des Rückenmarks." Leipzig.

⁷*Gowers*.—"Diseases of the Nervous System." Vol. I, p. 399.

⁸*Strümpell*.—"Text Book of General Medicine," 1889, p. 597.

currence of the chancre and the first symptom of tabes noticed by the patient varied from one to forty years. This point was not recorded in 57 cases. In 11 cases, or 10 per cent., the first symptom was noted one year after the presence of the chancre. Gowers⁹ says that the first symptom of tabes rarely appears within the first three years after the chancre. In one case it was not noticed until 40 years after the occurrence of the chancre, but in no other case was the time between the chancre and the first symptom more than 29 years. In two of the cases which Thomas reported the time between the chancre and the first symptom was 30 and 40 years respectively.

TABLE II. TIME BETWEEN CHANCRE AND FIRST SYMPTOM.

1 year in 11 cases;	16 years in 3 cases;
2 years in 2 cases;	17 years in 3 cases;
3 years in 4 cases;	18 years in 9 cases;
4 years in 3 cases;	19 years in 1 case;
5 years in 6 cases;	20 years in 6 cases;
6 years in 4 cases;	22 years in 2 cases;
7 years in 3 cases;	23 years in 4 cases;
8 years in 9 cases;	24 years in 2 cases;
9 years in 4 cases;	27 years in 1 case;
10 years in 8 cases;	28 years in 2 cases;
11 years in 5 cases;	29 years in 3 cases;
12 years in 5 cases;	40 years in 1 case;
13 years in 3 cases;	Not stated, 57 cases.
14 years in 3 cases;	
15 years in 2 cases;	Total 166

Among the other conditions mentioned in these histories as possible etiologic factors are: alcoholism in 6 cases; exposure to heat and cold in 8 cases; sexual excess in one case; articular rheumatism in one case; miscarriages in 5 cases, and trauma in 4 cases. In almost all these cases, syphilis was also present. The trauma in one case consisted of a fracture of the pelvis and sacrum from a fall of twelve feet upon the buttocks. The miscarriages were probably all due to existing syphilis.

⁹Gowers.—"Diseases of the Nervous System," Vol. 1, p. 400.

The duration of the disease (see Table III.), at the time the initial examination was made, was not known or ascertained in 57 cases, but in the others it varied from six months to 30 years. In 65 cases the disease had been present for one year, in 47 cases for 2 years, and in 32 cases for 3 years, when relief was sought at the Clinic. The exceedingly slow course of the disease in some cases is emphasized when it is remembered that all these patients, even those who had had the disease between 20 and 30 years, were able to walk to the Clinic.

TABLE III. DURATION OF THE DISEASE.

6 months in	4 cases;	10 years in	13 cases;
9 months in	1 case;	11 years in	1 case;
1 year in	65 cases;	12 years in	3 cases;
2 years in	47 cases;	15 years in	4 cases;
3 years in	32 cases;	16 years in	2 cases;
4 years in	12 cases;	18 years in	1 case;
5 years in	13 cases;	20 years in	1 case;
6 years in	12 cases;	21 years in	1 case;
7 years in	7 cases;	23 years in	1 case;
8 years in	3 cases;	27 years in	1 case;
9 years in	4 cases;	30 years in	1 case;
Not stated in 57 cases.			

There are three symptoms which, when all are present, establish a positive diagnosis of tabes. These are the absence of the knee-jerks, and the presence of the Argyll-Robertson pupils and of the lightning pains. The presence of any two of these symptoms makes the diagnosis of tabes probable, especially when either ataxia, or the Romberg symptom, is present also. That these symptoms are not always present in undoubted cases of tabes will be seen from the following figures. We will take up the symptoms of tabes in our 286 cases in the order of their importance from a diagnostic standpoint, and of their frequency.

While we find the knee-jerks typically absent in 95.2 per cent., or 258 of the 271 cases in which this symptom is recorded, we also come upon some interesting variations in the condition of this reflex. In three cases both knee-jerks were

present and normal. In one case both knee-jerks were present but delayed in their action. Later, in this case, both knee-jerks were absolutely lost. In two cases both knee-jerks were only diminished in their activity. In one of these cases a later examination showed a complete absence of the knee-jerks. The right knee-jerk was normal and the left absent in 3 cases, and the left knee-jerk normal and the right absent in four cases. This condition indicates that only one-half of the cord was involved at the time of the examination. Thomas found the knee-jerks absent in both knees in only 81 per cent. of his cases. The action of the knee-jerks was diminished in six cases, normal in four, and not noted in 14 of his cases. Leimbach,¹⁰ in a study of 400 cases, noted the absence of knee-jerks in 92 per cent., and a change in them in 4.25 per cent. Bernhardt,¹¹ in 46 cases in which this symptom was noted, found the knee-jerks absent in 44 cases, or 95.6 per cent., and present in two cases. This percentage is almost the same as that found in these 286 cases.

The arm-reflexes, the elbow- and wrist-jerks, were absent in 13 of our cases, but were present or not recorded in all the others. One of the cases in which the arm-reflexes were absent was one of cervical tabes with marked ataxia of the arms and no involvement whatever of the lower extremities. The condition of the plantar, the abdominal and cremasteric reflexes was mentioned in a few of the cases, but the number in which they were noted is so small that the figures are of no importance.

One of the cardinal symptoms of tabes is the condition of the pupils known as the Argyll-Robertson pupil, in which the pupil reacts to accommodation but not to light. That the absence of this symptom does not, however, preclude the diagnosis of tabes we find from the examination of the pu-

¹⁰Leimbach.—"Statistisches zur Symptomatologie der Tabes dorsalis." *Deutsche Zeitschrift für Nervenheilkunde*, Bd. vii., Abth. 5 u. 6, 1895, p. 493.

¹¹Bernhardt.—"Zur Pathologie der Tabes." *Virchow's Arch.*, Bd. lxxxiv., i., p. 1, 1881.

And "Ueber das Vorkommen von Neuritis optica bei Tabes." *Berlin. klin. Wochenschrift*, No. 28, p. 603, 1895.

pils of these 286 cases. The Argyll-Robertson pupil was present in both eyes in only 175 cases, or 61.18 per cent. It was present in two other cases in the left eye only, the pupil of the right eye in each case reacting normally. Neither pupil reacted at all, to either light or accommodation, in 15 cases, and in 26 cases both pupils reacted sluggishly only. The left pupil did not react at all, the right being normal, in 6 cases, and the right pupil reacted sluggishly only, while the left responded normally, in one case. These figures give a total of 78.67 per cent. of cases in which there were changes in pupillary reaction, which is much greater than the 70.25 per cent. found by Leimbach. Schaffer, in his new book on tabes, says that Gowers states that the Argyll-Robertson pupil is only present in those cases of tabes which have had syphilis. I have been unable to verify this reference, but in 20 consecutive cases, of those under consideration here, which have had no syphilis, the Argyll-Robertson pupil was present in each. There is no doubt but that, if this point were investigated in the remainder of the 88 cases in which syphilis was undoubtedly absent, the Argyll-Robertson pupil would be found in many more. At any rate, the fact that the Argyll-Robertson pupil was present in 20 of the 88 cases, in which syphilis was absolutely denied, refutes the statement credited to Gowers. Of the other eye symptoms noted, nystagmus was present in 7 cases, or 2.44 per cent. Strabismus was present in 34 cases, and other ocular paralyses, including diplopia, were noted in 58 cases. Among this latter number are undoubtedly classed some cases of strabismus also.

Optic atrophy, either well-established or beginning, was found in 25 cases. In one case, that of a colored man, it came on as the first and only symptom except the blindness caused by it, and the absence of the knee-jerks. Eleven cases suffered from blindness. There is a great variation in the percentage of optic atrophy found by different investigators in cases of tabes. Von Grosz¹² found it present in 88 per cent.

¹²*Von Grosz.*—"Die Symptome der Tabes dorsalis am Auge." Referat in *Centralbl. f. prakt. Augenheilkunde*, p. 181, 1896.

of his cases, Berger¹³ in 46 per cent., Dillman¹⁴ in 42 per cent., Marina¹⁵ in 12 per cent., Bernhardt in 10.3 per cent., Thomas in 10 per cent., and Leimbach in 6.75 per cent. The proportion of optic atrophy among the cases now under consideration was 8.74 per cent., which it appears is next to the lowest percentage found by the above investigators. In 21 cases of tabes previously studied by the present writer¹⁶ five were blind, which gives nearly 24 per cent. of complete optic atrophy. Among these 21 cases there were also six which showed changes in the optic nerve indicating a beginning atrophy. If we add these latter cases to those of complete optic atrophy, it will give us the presence of optic atrophy in 52.38 per cent. of these 21 cases. But these cases were most of them in advanced stages of the disease, confined to a hospital, and therefore one might call them selected cases.

Now, if we add together the cases studied by von Grosz, Berger, Bernhardt, Leimbach, Thomas, and myself, we have 1088 cases of tabes, and in 222 of these optic nerve atrophy was present. This gives us a percentage of 20.4 for the occurrence of optic nerve atrophy in these cases. This percentage is rather interesting as the number of cases is so large and perhaps comes near the truth of the matter. In the light of these figures, it seems probable that optic nerve atrophy does not occur as frequently in tabes as some of the high percentages would lead us to believe, nor as infrequently as the low ones would indicate. In considering the effect of optic atrophy upon the progress of the disease Benedict¹⁷ says

¹³Berger.—"Die Sehstörungen bei Tabes dorsalis und Versuch einer Einheitlichen Erklärung des Symptomen-Complexes der Tabes." Arch. f. Augenheilkunde, Bd. xix., pp. 305 u. 391, 1888.

¹⁴Dillman.—"Ueber tabische Augensymptome und ihre diagnostische Bedeutung unter gleichzeitiger Berücksichtigung der Tabes-Syphilis Frage, nach dem Material der Schaefer'schen Augenklinik in Berlin." Dissertation, 1889.

¹⁵Marina.—"Ueber Multiple Augenmuskellähmungen." Leipsic und Vienna, 1896.

¹⁶Bonar, A. B.—"Sensory Disturbances in Locomotor Ataxia. A Study of the Localization of Anesthetic Areas as an Early Symptom." N. Y. Medical Record, Vol. 51, 1897, p. 721.

¹⁷Benedict.—"Ueber die Prognose und Therapie der Tabes." Wiener med. Presse, No. 34, 1887.

that all symptoms, even after they have attained a high degree, *retrograde* as soon as optic atrophy appears. He says he has never known an exception to this rule. This point has not been followed up in the histories of our cases with optic atrophy, but it is known to the writer that in one case, that of the colored man whose first symptom was blindness due to optic atrophy, there has been no further advance of the disease. The only symptoms he has ever presented have been the blindness due to optic atrophy and a loss of knee-jerks. The two patients of Bernhardt, in whom the knee-jerks were present, had optic atrophy as the first symptom, but whether the other symptoms of tabes were held in check in these cases is not known.

The symptom which is often the first noticed by the patient and is usually the one about which they complain the most, is pain. The sharp, lightning or lancinating pains of tabes are characteristic of the disease, and are almost invariably present at some time during its course. In these 286 cases pains were present in the legs in 186 cases, or 65 per cent.; in the thighs in 14 cases; in the trunk in 37 cases, or nearly 13 per cent.; in the arms in 20 cases, and in 2 cases they were general. Pains were also present in 37 cases in which their location was not stated. In many of the above cases the pains occurred at the same time in two or more locations, as in the thighs and legs, or the trunk and legs, or the trunk, arms and legs. Leimbach found that 88.25 per cent. of his 400 cases had pains in the legs, and Bernhardt noted them in 79.5 per cent. of his cases. If, to our 186 cases in which pains in the legs are definitely noted, we add the 2 cases in which they were described as general, and the 37 cases in which the location of the pains was not noted, in both of which latter groups the legs were in all probability the parts affected, we find that 78.67 per cent. of the 286 cases had pains in the legs. This is very near Bernhardt's, and comes somewhat nearer Leimbach's percentage and probably nearer the truth. Thomas found pains in the legs had occurred in only 60 of his cases or about 54 per cent.

The Romberg symptom (a swaying of the body when standing with the eyes closed) was present in 226 cases, or 79 per cent. This proportion is about the same as in the cases of Thomas, who found this symptom present in 76.6 per cent., but it is smaller than in the cases of Leimbach, who noted it in 88.75 per cent.

Ataxia was present in the legs in 202 cases, or 70.62 per cent., which is about the same frequency as found by other observers, except Bernhardt, who found this symptom present in 94.1 per cent. of 51 cases. Ataxia was also present in the arms in 22 of our cases.

At one time or another, but usually in the early stages of the disease, 139 cases, or 48.6 per cent., experienced the girdle sensation or feeling of constriction around the waist or trunk, and 5 cases had at times a feeling of tightness around the knees or thighs similar to the girdle sensation. In his cases Leimbach found this symptom present in only 31 per cent., and Thomas noted it in only 24 per cent. of his, which percentages are much smaller than that noted by the present observer.

Objective disturbances of sensation, of which the patient is usually ignorant, were found in all those cases in which this symptom was sought. Anesthesia to touch, or to pain, or to both, on the trunk and legs was the most common disturbance. Besides this, in different patients, there were various combinations of anesthesia, analgesia, hypesthesia, hypalgesia, hyperesthesia, hyperalgesia, and delayed sensation to touch, pain, heat, and cold. The areas of anesthesia on the legs and arms were usually of the stocking and gauntlet type, and the sensations of touch and pain were the ones most commonly affected. On the trunk the disturbance usually consisted of bands of anesthesia to touch only, of varying width and usually extending from the median towards the axillary line in either the front or back, or both. Sometimes two or more parallel bands were found, indicating the simultaneous invasion of the cord at several distinct levels. The frequency of this trunk anesthesia in tabes is shown by the

symptom of the disease. This proportion of crises in these results of the investigations of Hitzig,¹⁸ who first called attention to trunk anesthesia in this disease, and who believes that it is practically always present; Laehr,¹⁹ who found anesthetic areas on the trunk in 55 out of 60 cases of tabes, or 91.66 per cent.; Patrick,²⁰ who found this symptom present in 17 out of 20 cases of tabes, and who says that 85 per cent. is a very conservative estimate of its frequency. In my study, "Sensory Disturbances in Locomotor Ataxia." Etc., previously referred to,¹⁸ careful and repeated examinations in twenty-one cases demonstrated the presence of disturbances of sensation of some kind in some part of the body in 86 per cent., that is, in all except three cases. Trunk anesthesia, however, was not found quite so frequently in these cases as Laehr, Hitzig and Patrick found it in theirs, for this symptom was found in only 15, or 71.43 per cent., of the 21 cases.

Paresthesia and numbness were complained of in 54.54 per cent., or 156 cases. In Leimbach's cases paresthesia was present in the legs in 64.5 per cent., and in the hands and forearms in 16.5 per cent., while Thomas found numbness recorded as complained of in some part of the body in a little over 40 per cent. of his cases. As the number of cases from which Thomas' proportion was obtained is much smaller than either Leimbach's or those now under consideration, the much greater percentage of cases with numbness found by Leimbach and myself probably indicates the frequency of this symptom much more accurately.

Crises occurred in 16.78 per cent of these 286 cases. These crises were gastric in character in 36 cases, intestinal or diarrheal in 5 cases, "simulating migraine" in one case, coughing (probably laryngeal) in one case, laryngeal in 4 cases, and in one case a crisis is mentioned, but its nature is not stated. In a number of cases a gastric crisis was the first

¹⁸Hitzig.—"Ueber traumatische Tabes und die Pathogenese der Tabes im Allgemeinen." Berlin, 1894.

¹⁹Laehr.—"Ueber Sensibilitätsstörungen bei Tabes dorsalis und ihre Localization." Archiv für Psychiatrie, xxvii., p. 688, 1895.

²⁰Patrick, H. T.—"Anesthesia of the Trunk in Locomotor Ataxia." New York Medical Journal, Feb. 6, 1897.

symptom of the disease. This proportion of crises in these cases is much greater than that found by Leimbach (5.25 per cent.) in his cases, or by Thomas (10.8 per cent) in his. Thomas noted 9 gastric, 2 laryngeal and one rectal crisis in his 111 cases. It is evident from these figures that gastric crises are the most common and that laryngeal or rectal crises are next in frequency.

One of the most common symptoms, of which those afflicted with this disease complain, is vesical disturbance. In 62.23 per cent., or 178 cases, there was bladder trouble, more often incontinence than retention of the urine. This vesical disturbance occurred most frequently during the early years of the disease. Incontinence sometimes changed to retention and *vice versa*, or the two conditions alternated for years. In 83 cases in which this symptom was sought for, Thomas found it present in 65 per cent., which nearly agrees with the percentage here stated. Leimbach, however, noted bladder trouble in 80.5 per cent. of his 400 cases, and Bernhardt in 74.07 per cent. of his 58 cases.

Sexual weakness, consisting of loss of desire or of sexual power, or both, was present in 17, or 6 per cent., of the 286 cases. In some cases the desire and power returned after a variable length of time. This very low percentage of weakness or loss of sexual desire and power is remarkable, and a failure to interrogate all the patients for this symptom is probably the cause, for Leimbach found it present in 58.25 per cent. of his 400 cases, Bernhardt in 43.7 per cent. of 49 cases, and Thomas in 84 per cent. of the 75 cases in which it was sought.

Eighty-one cases, or 28.32 per cent., suffered from a loss of muscular sense. This loss was so marked in some cases that the patient would lose his legs in bed or when sitting at a table. In very few of the cases was there a loss of muscular sense in the arms and hands. In these cases it consisted of an inability to differentiate between objects of the same size and shape but of different weights (astereognosis). An examination of 44 of Thomas' cases gave a loss of muscular sense in 38, or 86 per cent. Undoubtedly many of these 286

cases under consideration here were not examined for this symptom, which will explain the small number in which it is reported.

There were trophic disturbances of the joints in 6 cases. Three of these were diagnosed as "Charcot joints," the knees being the parts affected. In the other three cases the condition recorded, "a swelling of the knee," was undoubtedly a Charcot joint in each. In fact, in two of these latter, a subsequent addition to the history states that the swelling had become a typical Charcot joint. Leimbach found arthropathies in only 1.75 per cent. of his cases, which is slightly less than the number, 2.1 per cent., found in these cases. Thomas reported five typical Charcot joints, and suspicious enlargement of the joint in three other cases, one of which latter developed into an undoubted tabetic arthropathy of the right thumb. Of the 5 Charcot joints noted by Thomas, 3 were located in the knee, one in the shoulder, and one in the elbow. The 6 arthropathies here reported affected the knee-joint in each case.

Perforating ulcers of the feet occurred in four cases. One of these patients had 3 ulcers at one time on one foot. Thomas reported the occurrence of perforating ulcers five times in his 111 cases.

Muscular atrophy was observed in three cases in the legs, and in one case in the arms. In two cases a "weakness in the peroneal group" was reported. Several patients complained of a general weakness, and of a loss of weight.

The other less common symptoms observed were a tremor of the face and tongue in two cases, and of the hands in three cases; anosmia (complete), in three cases; loss of taste in one case; deafness in two cases, and vertigo in one case.

For convenience in reference and comparison we will tabulate the above symptoms in the order of their frequency, giving the percentage of the cases in which each symptom was noted:—

	PER CENT.
Loss of knee-jerks.....	95.2
Changes in knee-jerks.....	3.69

Romberg symptom	79.02
Change in pupillary reaction.....	78.67
Pains in the legs.....	78.67
Ataxia in legs.....	70.62
Vesical disturbance	62.23
Paresthesia and numbness.....	54.54
Girdle sensation	48.6
Loss of muscular sense.....	28.32
Crises	16.78
Pains in trunk.....	12.93
Optic nerve atrophy.....	8.74
Ataxia in arms.....	7.69
Pains in arms.....	6.99
Loss or diminution of sexual instinct.....	6.
Pains in thighs.....	4.89
Ocular paralyses (strabismus, diplopia, etc.)..	3.21
Nystagmus	2.44
Arthropathies	2.09
Constriction around legs or thighs.....	1.74
Tremors	1.74
Perforating ulcers of foot.....	1.39
Muscular atrophy	1.39
Anosmia	1.04
Deafness	0.69
Vertigo	0.34
Loss of taste.....	0.34

Inasmuch as the number of cases here studied is so large, the percentages in the above table are of interest and value. It is only by the gathering together of large numbers of cases that satisfactory deductions can be made from the percentages obtained. The symptoms of tabes are practically never all present in one patient. They occur in such a great variety of combinations, that it is only by studying a large number of cases that we can arrive at any true conclusion concerning the frequency, duration, and importance of the different symptoms. It is with the hope that the above cases will prove of more than passing interest that they are presented.

It is to be regretted that one or two of the symptoms were not sought for, or at least not recorded, in a few of the cases.

I wish to thank Prof. M. Allen Starr for his kind permission to publish these cases.

THE SCAPULO-HUMERAL REFLEX OF
VON BECHTEREW.

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The discovery of the clinical significance of the knee-jerk, by Westphal and Erb, was probably the greatest single step in neurological diagnosis ever made. It remains and probably will remain, the pre-eminent reflex; for in any brain-lesion, and in any lesion of the upper part of the cord, the knee-jerk reveals practically all that any cord-reflex can reveal; and in lesions of the lower part of the cord the lumbar region is involved in the majority of cases.

No reflex in the upper part of the body,—even if one were found as constant as the knee-jerk—can therefore be expected to equal the knee-jerk in clinical importance.

Apart from this consideration there is a law in neurophysiology which forbids us to hope that any reflex having its center in the cervical cord can speak as clearly of conditions in this part of the cord as the knee-jerk does of conditions in the lumbar enlargement. This law relates to the inhibitory control exercised by the brain over all reflexes, and is to the effect that the nearer we approach the brain, in testing reflexes at successive levels, the greater is this checking influence and the less distinct the reflex action. However, so much do we feel the need of additional means for diagnosis when affections of the cervical cord are under consideration, that any new suggestion is welcomed, and should be given a conscientious trial, even in the face of theoretical discouragements.

In the *Neurologisches Centralblatt* of March 1, 1900, von Bechterew announces a new reflex having its center in the cervical enlargement of the cord. He gives to it the name *scapulo-humeral reflex*, and claims for it a constancy greater

than that of the biceps and triceps jerks or the scapular and palmar cataneous reflexes. This new reflex, the author says, "is elicited by the percussion-hammer along the entire inner edge of the shoulder blade beneath the inner angle of the same—most markedly however, at the inner edge of the scapula near the *angulus inferior*. It consists chiefly in adduction of the corresponding humerus toward the trunk, often also in slight outward rotation, mainly produced by contraction of the *infraspinatus* muscle, and apparently of the *teres minor*. Not rarely, however, by extending to the deltoid and flexors of the fore-arm (especially the biceps) the usual reflex leads to abduction of the arm and to slight flexion in the elbow joint."

Von Bechterew then enumerates the conditions which affect this reflex. Briefly, it is absent in poliomyelitis, in the spinal form of progressive muscular atrophy, and in neuritis, when the shoulder-girdle muscles are affected; it is diminished or absent in muscular dystrophy and in "rigidity of the spinal column;" it is exaggerated in cerebral hemiparesis or hemiplegia, especially when there is marked atrophy of the shoulder-girdle muscles. So in determining whether such atrophy be of spinal or neuritic, or of cerebral origin, in a given case, the state of the scapulo-humeral reflex is "significant."

Haenel, in the same journal, of the date May 1st, 1900, reports results of testing for this reflex in 120 normal subjects, with his conclusion that the scapulo-humeral, while a true and serviceable reflex, yet ranks below those of the triceps, radial-periosteum and biceps in constancy, exceeding in this regard only the ulno-periosteal reflex.

Dr. F. X. Dercum suggested to me last August that I study this reflex in the nervous wards of the Philadelphia Hospital, to learn particularly the character and the degree of constancy of von Bechterew's reflex in hemiplegia and in spinal muscular atrophy. I now report my findings in 122 cases, mostly of organic diseases, as follows:

Hemiplegia	71	
(Left—44; right—27)		
Progr. musc. atrophy (spinal)	4	
Locomotor ataxia	9	
Cerebro-spin. syphilis	3	
Pott's disease of spine	6	
(Cervical—2; dorsal—4)		
Infantile diplegia	3	
Disseminated sclerosis	7	
Amyotrophic lat. sclerosis	4	
Syringomyelia	2	
Friedreich's ataxia	1	
Crossed paralysis	1	
Pseudo-muscular hypertrophy	1	
Epilepsy	1	
Lead palsy (wrist-drop)	3	
Traumatic monoplegia	1	
Alcoholic neuritis	1	
Thrombosis right axillary artery with pseudo- ankylosis	1	
Left (cerebral) hemianesthesia	1	
Brain-tumor	1	
Paretic dementia	1	122

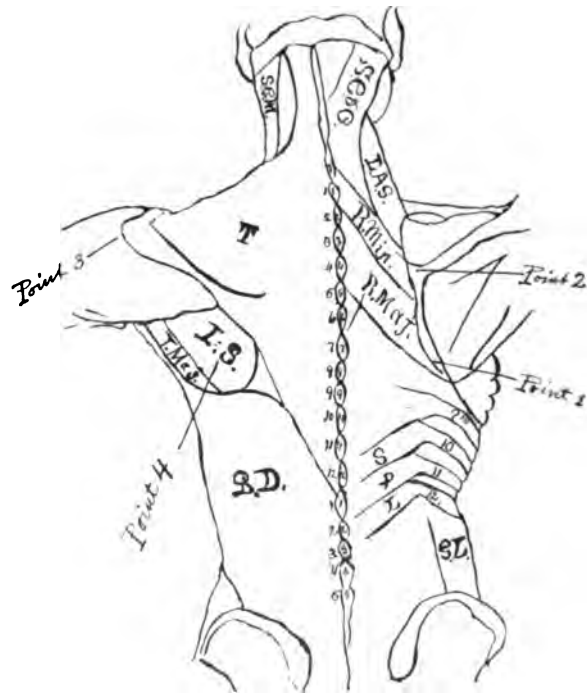
First, as to the *constancy* of the scapulo-humeral reflex.

There was *no response* on tapping at von Bechterew's point (1 in the diagram) in 40 cases, as follows:

Hemiplegia	14	
(Left 8; right 6)		
Locomotor ataxia	8	
Progr. musc. atrophy (spinal)	4	
Dorsal Pott's disease	2	
Cervical Pott's disease	1	
Disseminated sclerosis	2	
Infantile diplegia	1	
Traumatic monoplegia	1	
Neuritis following axillary thrombosis	1	
Lead palsy	3	
Friedreich's ataxia	1	
Syringomyelia	2	40

Percussing with the hammer at the base of the scapular spine (point 2 in the diagram), where Haenel says "the reflex may be best obtained," did induce a motion when none was obtained by percussing at point 1, in the following cases: on the left side in one case of cervical Pott's and in 3 cases of left hemiplegia. In one of these latter cases a reaction was obtained also at the point of the shoulder (end of acromion—point 3 in diagram). Moreover in 2 cases of right hemiplegia and in one of dorsal Pott's, negative at both 1 and 2, a reac-

tion was obtained at point 3. In one case of left hemiplegia, one of spinal muscular atrophy, one of syringomyelia, one of cervical Pott's, and in the case of "neuritis following thrombosis of the axillary artery," a reaction was obtained by striking the body of the infraspinatus (point 4 in the diagram), and nowhere else: this reaction consisting, in each case, in



strong external rotation of the upper arm, apparently due to a direct contraction of the infraspinatus muscle.

All the arm-reflexes were absent, along with von Bechterew's, in the following cases: left hemiplegia 1; progr. m. atrophy (spinal) 3 (except slight wrist-jerk in one); traumatic monoplegia 1; dissem. sclerosis 1.

In the 33 other cases, negative as to the von Bechterew

reflex, the biceps and triceps jerks were present in varying degrees of activity, and it was not apparent why the scapulo-humeral alone should be abolished.

Still, on von Bechterew's premise this diminution or absence of his reflex might have been expected in the 8 cases of loc. ataxia, 4 cases of spinal musc. atrophy, 1 case of cervical Pott's (perhaps), 1 case of neuritis following thrombosis, 1 case of traumatic monoplegia, 1 case of Friedreich's ataxia, 2 cases of syringomyelia; total 18 cases.

Its unexpected absence in the other 22 cases is probably accounted for in the majority as follows:

By extreme atrophy and contracture in 8 instances; atetosis in 2 (hardly); enormous adiposis in 1; incomplete relaxation in 2 demented patients; complicating paralysis agitans in 1.

No explanation was apparent for its absence in 2 cases of hemiplegia, one of disseminated sclerosis, the 3 of lead palsy, and the two of dorsal Pott's disease. On the other hand, in no case was the scapulo-humeral reflex present when it should have been absent. In short, its presence is significant; its absence is an uncertain sign.

Second, as to the components of the scapulo-humeral reflex; that is, the muscles implicated, and the motion of the arm resulting. These showed no constancy. In 48 cases the deltoid could be seen and felt in action; in 48 the biceps—the corresponding motions of abduction of the upper arm and flexion of the forearm being observed. Adduction of the upper arm occurred only 10 times. Rotation of the forearm occurred in 20 cases,—external in 10 cases, internal in 10. Generally this rotation was due apparently to the action of the biceps. Rotation of the upper arm was seen in only 12 cases; external in 6 of these, internal in the other 6. Excitation of even such distant muscles as those on the anterior part of the thorax often took place, the pectoralis major contracting rather strongly in 19 cases. This muscle, indeed, appeared to be dominant in 8 cases, the motion of the arm being adduc-

tion in 4 of them, internal rotation in the other 4. In 5 cases the triceps acted, in 4 the trapezius.

The most frequent combination of motions, among all cases, was abduction of the upper—with flexion of the forearm, and a movement of the shoulder blade which I call “adduction of the scapula.” This latter phenomenon occurred 36 times. It consists in a jerk of the lower angle of the scapula in the direction of the spinal column, and is probably due to the action of the rhomboid muscles. We may conclude, then, as Haenel did from his study of normal subjects, that the motion which von Bechterew describes as usual, namely, adduction and external rotation of the upper arm, is not so common as is abduction of the upper, with flexion of the forearm, which von Bechterew thought to be only occasional. Von Bechterew’s statement as to the differential value of the reflex in atrophies of various origin, is rather indefinite. Shoulder-girdle atrophy of considerable degree was present in 36 cases of my series, and while in 25 of these (hemiplegics), accentuation of the reflex, which generally occurred, and in 6 (4 of progr. musc. atrophy, 1 of cervical Pott’s, 1 of Friedreich’s ataxia) absence of it—corresponded with von Bechterew’s statement; yet in the other 5 cases of atrophy (1 of cervical Pott’s, 2 of amyotrophic lat. sclerosis, and 2 of cerebro-spin. syphilis) we see examples of atrophy of cord origin with an active scapulo-humeral reflex. In a case recently exhibited by McCarthy at the Neurological Society, shoulder-girdle and arm-atrophy, due unquestionably to cord-disease at the level of the 5th or 6th cervical segment, was accompanied by exaggeration of the scapulo-humeral and all other reflexes, presumably on account of lateral-tract involvement.

The more precise statement, therefore, would be: in lesions of the upper segment of the motor system (pyramidal tracts), the reflex is increased; in lesions involving the reflex path (peripheral nerves or spinal cord), it is diminished or absent. Thus the scapulo-humeral reflex is an analogue of the knee-jerk (Dercum).

This reflex is less constant than those of the biceps and triceps. It, or a similar reflex may be obtained about as well at the point of the shoulder; it may be elicited at the base of the scapular spine as well as, or even better than, at the lower angle.

Its muscular components are so variable and widespread, the reflex is so complicated and indefinite as compared with the others, that we shall not feel much confidence in any deductions drawn from it until clear post-mortem data shall have established its exact correspondence with a somewhat limited portion of the cervical enlargement.

PSYCHICAL FORM OF EPILEPTIC EQUIVALENT.

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It is not uncommon to note in the course of epilepsy of long duration that the convulsive attack is preceded, followed or accompanied by psychical disturbance. This may occur as mania, dementia, melancholia, periodical insanity, or paranoia, which in turn may not infrequently be associated with homicidal tendencies or other impulsive acts.

It is of the utmost importance to know that these insanities occur, for their recognition and diagnosis in medico-legal cases are of value.

We recall the homicidal tendencies in an epileptic patient at the Buffalo State Hospital who became very violent in one of these psychical conditions, and at one time made a homicidal attempt on his attending physician with a large bread knife obtained from the diet kitchen. This man had lucid intervals, and having charged the management of the hospital with confining him, a sane individual against his will and consent, was taken through *habeas corpus* proceedings to court, where unfortunately for his case, he was seized with another violent maniacal attack in which he threatened bodily injury to the judge.

So also the case of Sadie Mc.,¹ an epileptic, sent to the hospital as a criminal prisoner by the court. The case caused wide-spread interest by reason of the heinousness of her offense. The patient was a children's maid, and in a mental paroxysm having a delusion in regard to her mistress, she threw two children from a considerable elevation off a bridge killing one. This case was interpreted from the evidence as one of epileptic insanity.

¹"The People vs. Sadie McMullen, a Medico-Legal Case." William C. Krauss; Journal of Nervous and Mental Disease, July, 1891, p. 416.

In these cases we have very good examples of a sudden insanity added to an epilepsy which was recognised by its hereditary tendencies and its symptoms, following a trauma or occurring idiopathically. They belong to the group of post-epileptic insanity.

Falret has described the intellectual *petit mal* with semi-consciousness and confused memory; in which it is difficult to enlist the attention. These patients leave home suddenly and wander aimlessly. During such attacks, which may vary from a few hours to a few days, such a person loses his self-consciousness, and may do some impulsive act, commit murder, or incendiarism, steal, expose his person, or commit other indecent acts.

According to Féré² the psychical seizures may replace the convulsive attack, or may occur independently of any convulsive attack and are to be regarded as psychical equivalents.

Robert Louis Stevenson in his wonderful character study of Dr. Jeckyl and Mr. Hyde must have had this type of epileptic in mind.

Many of these acts are complex and are carried out with a great deal of reason and often with much cunning, as witness the case reported by Lesigne and Legrand du Saulle, of a patient who took passage at Havre and did not regain his normal consciousness until he arrived at Bombay.

A case worthy of notice which from our observation and that of our colleague Dr. James W. Putnam belongs to this class of psychical equivalent of an epileptic paroxysm is the following:

B. C.— was found by the Buffalo police aimlessly wandering through the streets of Buffalo. He was taken to the station house, but was unable to answer any of the questions pertaining to himself. At the request of the police a physician examined him, and advised his removal to the hospital, suggesting that he might be suffering from a temporary insanity following influenza, which was then prevalent.

He was taken to the Buffalo General Hospital, service of Dr. Cary. He could not remember his name nor that of his

²"Twentieth Century Practice of Medicine," pp. 603-606.

friends, and exhibited a complete amnesia. When asked his name he would think intently and answer: "I cannot remember, the papers in my pocket will tell who I am. I have such a pain in my head." He would accompany this remark by raising his hand to his head.

He would speak occasionally of the Senator, but when asked the name of the Senator would reply that he lived but three doors from his home. He would ask for his wife, but was unable to give her name. If questioned, he apparently heard the words but could not obtain their meaning, and he reminded us much of a case of amnesic aphasia. He asked for a cigarette, and being given one with a match made no effort to smoke it. His pocket-book contained considerable money and a check, and by reason of papers found the identity of the patient became known to us. He thought that he was in Roosevelt's Hospital, New York. The finding of the patient's money and valuables excluded any supposition that he had been drugged and robbed, and no symptoms of drugs were obtained.

The skull was examined for evidence of fracture or other violent traumatism with negative result.

The pupils were slightly irregular but responded readily to light. There was no paralysis or paresis of any muscles supplied by the cranial nerves, nor was there paralysis or paresis of the extremities.

There was some hyperesthesia especially marked about the head, but no other symptoms were present suggesting meningitis, brain growth, or cortical irritation. The kneejerks were exaggerated. The bladder and rectum were normal. Temperature, pulse and respiration were quite normal; urinalysis was negative. The thoracic and visceral organs gave negative findings.

Every condition was excluded except either a possible epilepsy or cerebral syphilis. No drugs were given and it was anticipated that his sensorium would eventually become clear.

He remained in this condition from his admittance, January 6, 1901, to the evening of Wednesday, January 9. During this time the patient was repeatedly examined and questioned as to his history but with no avail. Wednesday evening the patient noticed that one of the electric lights in his room had a shade while the others had none. He then for the first time remarked to the nurse that he was in a strange room, and that he did not understand how he happened there.

He gradually recovered his memory to the preceding Friday, *i.e.*, there was total amnesia from Friday noon until the following Wednesday evening. Having regained his consciousness the following history was obtained:

B. C., 28, contractor, born in the United States, married.

Family history:—Father died when 56 years old as a result of a paralytic stroke. A grandfather on father's side was a college professor, and lived to be 102 years of age. Mother died when about 34 years old of what he termed "rheumatism of the heart." She was 14 years old when she married, the father being 42.

Has three brothers and one sister, all living and well. A brother when a child, had "fainting spells," and many specialists in New York City were consulted. On the advice of a friend the child was taken to a religious order in Hoboken and cured.

Present history:—Had all the diseases of childhood, and when 9 years old had typhoid fever.

Has never been a drinking man nor has he any manifestations of specific disease.

Last July while sea-bathing, he dived from a raft and struck his head on the sea-bottom. He was taken out of the water in an unconscious condition and carried to the hotel. He remained in this state for two to three hours. There was no fracture nor any paralysis following, but the right side of the body became somewhat edematous and there was paresthesia, but he recovered in a few days. At present pressure on the vertex causes perceptible pain but no scar can be seen or felt. He does not remember ever having had any other injury to his head. Since the injury he often talks in his sleep. Being much interested in the successful campaign of his friend Senator P., he worked diligently in his behalf. He has also been much worried because of the ill health of his wife.

Friday morning, January 4, 1901, the patient after his breakfast went from his home on 52nd St., New York, down town to transact some business. He returned at about 1 P.M. to go to his home, and all that he can remember is that to save time he took an elevated train.

In the meantime, in his subconscious state, he had made a railway journey from New York City without bodily harm to himself and with his money intact. He had railway passes on all roads.

All that transpired from the time he took the elevated

train to the time he regained his normal state is an intellectual blank to him.

He was quite weak and lost strength as the result of his illness, but left Friday for his home in New York, having regained all his mental faculties.

We have heard from the patient since his return. He has had another similar attack but of shorter duration, lasting some three and one-half hours, and is going to submit to an operation for relief.

CASES ILLUSTRATING THE DIFFERENTIAL DIAGNOSIS
OF CEREBRAL AND HYSTERICAL HEMI-
ANESTHESIA.

BY CHARLES K. MILLS, M.D.,
AND
THEODORE H. WEISENBERG, M.D.

The following cases, three of which were exhibited at the Philadelphia Neurological Society, December 17, 1900, were studied in the Men's Nervous Wards of the Philadelphia Hospital.

Case I.—*Complete and Persistent Hemianesthesia Probably due to Lesion of the Thalamus.* E. R., married, white, aged 70, a painter, was perfectly well up to eight years ago, when he fell about thirty feet from a scaffold, striking on the right side. He was unconscious for twenty-four hours. On recovery he had paralysis of the right half of the body, with total loss of sensation. Since then he has regained almost complete use of the arm and leg, but anesthesia still remains. Examination shows absence of all forms of sensation for the right half of the body, including the right half of the tongue, the mucous membrane of the mouth and nose, and of the palpebral but not of the bulbar conjunctiva. The anesthesia is not limited to the median line of the body, but extends in some places a little to the other side, as on the chest. Astereognosis is present as tested in the anesthetic hand. In this case the anesthesia has remained constant, the same results being obtained on repeated examinations.

Taste, smell and hearing are absent on the affected side.

The lesion in this case probably involves the thalamus, as is shown by the completeness and constancy of the absence of the sensory phenomena.

Case II.—*Hemianesthesia Most Marked Distally Probably Due to Lesion of the Thalamus and Adjacent Capsule and Sub-cortex.* W. K., white, married, aged 66, cement worker, denied syphilis, but was a moderate drinker, had been healthy until fifteen weeks since, when, while working in the street on a hot day, he fell and was unconscious for about twenty hours. On recovery he had a complete right-sided hemiplegia. His speech was not affected.

He was admitted to the Philadelphia Hospital five weeks after the "stroke." When admitted he had regained partial

use of the right arm and leg, the leg having improved more than the arm. The arm shows moderate contracture.

The patient was examined on admission by Drs. Mills and Spiller. The examination showed absence of all forms of sensation over the right arm to a point corresponding to the insertion of the deltoid muscle. From here to the shoulder, sensation was impaired, and still higher it became less marked. At this examination the anesthesia in the lower extremity was also more marked distally. All forms of sensation were absent to an irregular line just below the knee, impaired from this point to the hip, while on the abdomen and chest it was but slightly diminished. The anesthesia in this case was not limited to the median line either on chest or face. In the latter it reached to the side of the nose and a part of the cheek of the other side. Sensation was dulled on the right side of the tongue and absent on the palpebral conjunctiva. Muscular and pressure sense were absent, and astereognosis present.

Subsequent examinations have never given the exact result above noted. The most frequent results obtained in the later examinations have been entire absence of tactile and temperature sense for the whole right side, pain sense however being retained in some areas of the shoulder, chest, abdomen and thigh.

The lesion is organic, probably involving part of the thalamus and adjacent internal capsule and subcortex. The variations in the anesthesia may be due to suggestion, which probably sometimes acts even in organic cases.

Case III.—*Hemianesthesia and Hemiplegia, the Anesthesia Decreasing as the Limbs are Ascended; the Lesion Probably Cortical or Subcortical or Both.* R. S., male, white, aged 34, waiter, was admitted to the Hospital May 5, 1899. For three of four years before admission he had had attacks of headache night and morning, with partial blindness for a few minutes. He had rheumatism in 1893 and 1898. No heart lesion is present. He has used alcohol and tobacco to excess, but denies syphilis, although syphilitic scars are present on various parts of the body.

On May 1, 1899, while carrying furniture, he noticed a weakness in his left arm and leg, and that his speech was somewhat affected. The loss of power became gradually worse, and on admission he could lift neither his upper nor lower extremity on the left side. His face was not affected. Examination at this time showed a complete left-sided anesthesia, and a right homonymous hemianopsia. Since admis-

sion he has partially regained the use of the leg and arm, of the leg more than the arm. The arm is somewhat contracted, both limbs are spastic, and the reflexes are exaggerated.

Sensation began to return about twenty-four days after admission, first in the leg, the less paralyzed of the two members.

An eye examination by Dr. de Schweinitz made within a week of this report showed no hemianopsia, and no other facts of interest.

The present conditions as to sensation on the affected side are as follows: Tactile sense is absent on the hand and forearm to about the middle of the arm, and impaired over the rest of the left half of the body. He cannot localize touch and pain impressions, but feels them better as the arm and leg are ascended. He recognizes the stick of a pin as a touch, but he cannot localize it. Heat and cold are also recognized as touches. He has lost muscular and posture sense, and astereognosis is present in the anesthetic hand.

This man has improved under time and antisiphilitic treatment. The lesion is organic, its site somewhat uncertain. A cortical and subcortical lesion involving both the sensory and motor regions might explain the case, which is also explicable on the theory of a capsular and subcortical lesion of considerable size. That the lesion is not thalamic, or at least not purely thalamic is indicated by the existence of permanent motor symptoms.

Case IV.—*Hemianesthesia of Hysterical Origin; Anesthesia Segmental and Easily Varied by Suggestion; Extreme Concentric Contraction of the Visual Field.* L. F., aged 76, white, married, Frenchman, painter, says that three years ago he fell from a three story building, but did not injure himself except that he was left with severe headaches, dizziness and failing vision. Twelve weeks ago while painting he says that he had another fall of about ten yards, and was unconscious for four hours. On recovery he had loss of power in the left leg and arm; his speech also was lost, but returned in two days. At the end of two weeks he was able to be up and about, and could use his limbs as well as he can now.

Examination shows only a slight weakness of the left limbs as compared with the right. Examination for sensation made November 16, 1900, gave the following: Tactile sense was present in the hand and forearm to a line about two inches below the elbow. It was absent in the rest of the arm, face, chest, and back to a line across the chest on a level with

the eleventh dorsal vertebra. From this point down, he could feel the impression but could not localize it, and likened it to the touch of a fly. The stick of a pin was recognised as touch where the tactile sense was present; where the tactile sense was absent pain sense also was absent. Temperature sense was absent, being recognised as touch where the tactile sense was present. The anesthesia in this case was strictly limited to the median line. Smell, taste, and hearing were all impaired on the affected side. Muscular and pressure sense were abolished, and astereognosis was present.

Since the initial examination the results of different examinations have been widely different. Segmental anesthetics have been present, and have been modified in various ways by suggestion, sometimes largely disappearing for a time. Ophthalmological examination by Dr. G. E. de Schweinitz is as follows:

R. E. plus 5-15 plus 3 0.75 at 33 cm.

L. E. plus 0.75 axis H 5-12 plus 0.75 at 33 cm.

The form field for the right eye is normal. There is an extreme concentric contraction of the field of the left eye. The patient distinguishes red centrally, but he is uncertain as to other colors,—green is called gray. Muscle balance is normal; muscle rotation normal. His pupils are equal, and react normally; they also react normally to mydriatics. No gross ophthalmoscopic changes. The veins appeared larger on the right than on the left. Incipient cataract was present in each eye. The left cornea was anesthetic. Dr. de Schweinitz states that except in one case, he has never seen such extreme contraction of the field as present in this man's left eye. The field was taken by three separate observers, and the same results were obtained.

The segmental anesthesia, greater proximally than distally; the facility with which the anesthesia can be modified by suggestion; the unilateral impairment of the special senses; and the unusual contraction of the visual field on the anesthetic side, are clinical phenomena which point to grave hysteria as the most probable diagnosis in this case.

The first three cases of this series are stamped as organic by their history and by the peculiarities of the anesthetics. One of the most interesting features is that to which especial attention has been called by Dejerine, namely, the tendency of anesthetics of organic origin to diminish in intensity as the limbs are ascended, and be less marked in the limbs which are less paralyzed, or which recover most when the paralysis has at first been complete.

NEW YORK NEUROLOGICAL SOCIETY.

February 5, 1901.

The President, Dr. Joseph Collins, in the chair.

A CASE OF LOCOMOTOR ATAXIA TRAINED BY THE
FRAENKEL METHOD.

Dr. A. Wiener presented this man. He had been under this system of training for about one year, and while ataxia was still present, he had been very greatly improved, and was now able to go about even at night unaided. There had been no other treatment for the tabes.

SARCOMA OF THE BRAIN.

Dr. A. Wiener also presented a pathological specimen from a person, seventeen years of age, who had first come to him about November 1, 1898. There was an absolutely negative history of alcoholism and syphilis. About two years before this time the patient had suffered from a severe fright, and almost immediately thereafter had had a severe convulsion. Nothing further had been noticed until the summer of 1898 when she had suddenly developed a difficulty of speech, with right facial palsy. She had suffered from bad headaches frequently for three months previously. On coming under observation, there had been excruciating pain over the occipital region, complete deafness in the right ear and a bulging of the tympanic membrane. The right sterno-mastoid muscle had been in a state of constant contraction, and there had been a double optic neuritis, most marked on the right side. The voice was hoarse. Neither the upper nor the lower extremities had suffered any loss of power. There was no swaying when the eyes were closed, nor was there any bladder trouble. Her temperature was 100° F. The seventh, eighth, ninth, tenth, eleventh and twelfth nerves were affected on the right side, and the sixth nerve on the other side. On November 8, a slight ptosis had been noticed, and the twelfth nerve palsy had become more marked. On November 28, there had been vomiting, vertigo and an increase in the ptosis of the left eye. On December 8 there had been complete third nerve palsy on the left side, and the headache had been very severe. Having diagnosticated a tumor of the

the brain, the patient had been sent to the Mt. Sinai Hospital. A mass had developed behind the ear, and on aspirating this it had been found that the case was one of congenital sarcoma. On January 11, 1899, the third nerve palsy had entirely disappeared on the left side, and the swelling behind the ear had grown larger. On January 21, the patient had suddenly become confused and blind in both eyes. In April it had been decided to open the mass to relieve the pain. By June 30 the patient had been up and around again. In October there had been a complete brachial plexus palsy on the right side. The tumor had kept on growing until almost the size of the patient's head. The patient had died on February 2, 1901, and an autopsy had been performed. The whole tumor had been found below and outside of the brain. In front was a large giant-cell sarcoma which had completely destroyed the sphenoid bone. At the back the tumor had destroyed the occipital bone. The brain was exhibited, and it showed that only the pons had suffered pressure. The tumor had apparently started in the mastoid portion of the temporal bone.

TENDON TRANSPLANTATION FOR DEFORMITY OF THE HAND.

Dr. W. R. Townsend presented a case of this kind, which had been exhibited to the Society about one year ago. It was a case of infantile cerebral palsy. Instruments had been used at the time of birth, but no damage had apparently been done to the exterior of the skull. The boy had never been able to use the right hand, and had a typical "claw hand" when he came under observation at the age of fifteen years. On December 21, 1899, an incision had been made over the wrist, exposing the tendons. The flexor carpi radialis, the flexor carpi ulnaris and palmaris longus were divided just above the annular ligament. The hand was then turned over and an incision made on the dorsum of the wrist, and the extensor communis digitorum exposed. A dissection having been made through the interosseous space, the extensor tendon was pushed through, and being too long, was doubled upon itself. It was then attached to the tendons previously mentioned. The union of the tendons had been satisfactory and permanent. The tendons had not shown any tendency to unite to the surrounding tissues. He was now able to write fairly well, whereas formerly he could not even grasp a pen.

Dr. B. Sachs said that he had been deeply interested in this sub-

ject, and it was certainly the best procedure that had been suggested for these cases of contracture whether of spinal or cerebral origin. The problem was to split the tendons of the over-acting muscles and unite them to the tendons of the under-acting muscles, and so restore the equilibrium of power. It had been found prudent not to allow the patient to exercise much or to use electricity until the tendinous union had become very firm. It was unfortunate that this boy was not able to extend his fingers, yet he had secured good extension of the wrist. In spite of the tendon transplantation the boy experienced no difficulty in producing flexion when he desired to do so.

Dr. Schlapp remarked that it seemed to him that the boy's hand was decidedly larger now than when he had seen the case a few months ago.

CUTANEOUS LESIONS WITH NEUROTIC SYMPTOMS.

Dr. Creighton presented a young woman of neurotic temperament who, four years ago, had had hysteria and typical attacks of grand mal. One year ago she had had the grippe, followed by pneumonia, and this had been succeeded by headaches, aching spine and numbness in the left side. There were severe contractures in the left arm. A small painful tumor had appeared in the left palm, and had been removed by the family physician under cocain. It had returned, and had been again removed. A galvanic current of 10 milliamperes had brought out a slight redness on the palm. Three days before menstruation a large red spot had appeared on the back of the forearm, and soon afterward several similar spots had made their appearance on the arm. A few days before the next menstruation these spots had returned, and in addition, a number of large blotches appeared on the left shoulder, and left side of the neck. The whole side was very hyperesthetic. There was slight narrowing of the visual field, and there was left-sided sweating. The speaker said that the case was very similar to one recently reported from Erb's clinic.

Dr. Joseph Fraenkel asked whether there had been a history of malaria, and whether the case might not be looked upon as one of morphea.

Dr. Creighton replied that there was no history of malaria, and the family physician had stated that the tumor which he had removed, grew on the nerve. The microscopical examination had been made at the laboratory of the Presbyterian Hospital, and the report had been that there was a slight round-cell infiltration only; no nerve degeneration was found. The thyroid gland was not enlarged.

Dr. C. L. Dana said that he had seen cases presenting just this appearance, but entirely free from hysteria.

Dr. W. B. Noyes said that several skin lesions were closely associated with nervous troubles. Herpes zoster, erythema multi-

forme and Raynaud's disease were distinctly related to the nervous system, yet it was very difficult to state the exact relation. It had occurred to him that the element of suggestion regarding the connection with the nerve might be responsible for some of the phenomena present.

Dr. E. D. Fisher said that this could not be properly described as simple hysteria, or as the result of mere suggestion. The eruption was not characteristic of an hysterical state.

Dr. M. G. Schlapp said that these cases had been described before; they had been brought on by suggestion. In this case an injection had been given in the arm, and shortly afterward this dermatitis had first appeared. The eruption was not characteristic of any particular skin lesion, but it closely resembled cases that had been described as hysterical skin manifestations. In typical zoster there was frequently a degeneration of the nerve fiber itself.

Dr. Sachs said that the case was a very unusual one, and he did not regard it as belonging to the class of hysterical hyperemia. It was certainly a distinct form of skin neurosis. The closest resemblance in the anatomical distribution was to herpes.

Dr. Joseph Collins said that if the girl should develop a pneumonia he would not be willing to call it a hysterical pneumonia; neither was he willing to call this a hysterical skin disease. He was inclined to think it was closely related to morphea.

Dr. Creighton said that a case had been reported very recently in which the gangrenous form had ultimately developed. This case had been described as hysterical. Dr. J. C. Johnston, the dermatologist, had seen this patient, and had looked upon it as hysterical.

PARALYSIS OF THE SPINAL ACCESSORY.

Dr. Pearce Bailey read this paper. He said that the chief interest of this nerve was surgical. Within the past year two instances had come to his notice of accidental section of the nerve. In most cases the paralysis which resulted from section was not particularly disabling, but such had not been the case in the instances referred to. When the sterno-mastoid was completely paralyzed the freedom of movement of the head was interfered with, but not totally abolished. In the two cases referred to the disability had been unusually great, and had led him to study more carefully the nerve supply. It was now regarded as a spinal nerve, pure and simple. The spinal portion of the nerve, represented by the external branch, springs from the upper five segments of the cord. Paralysis of the nerve presents a varying symptomatology according to the site of the lesion. An injury outside of the skull to cause symptoms referable to both branches must be situated directly at the base of the skull. The extracranial lesions of the spinal accessory nerve are confined to the external branch, and are nearly always traumatic. Neuritis in this nerve is rare. A case was cited to illustrate the possible traumatic origin of spinal accessory palsy by injury

with a blunt instrument. In two cases reported the paralysis had been directly the result of operation. In the second case the resulting incapacity had been so great that the right arm had been rendered practically useless for any heavy work. Neurorrhaphy had been performed about six weeks after the operation at which the nerve had been injured, and the ends of the divided nerve had been found separated over one inch. The improvement in motor power had been slow. A reference to the literature showed conflicting views regarding the nerve supply. Dr. Bailey said that the spinal center between the first and fifth cervical segments of the cord was fixed and constant, but occasionally all the axones pass to the muscle by the spinal accessory. Under these circumstances the motor impulses reach the trapezius through the spinal accessory, and hence, section of it means total palsy.

Dr. W. M. Leszynsky said that he had seen a patient two months ago who had been operated upon for torticollis. Over one inch of spinal accessory nerve had been removed on the left side without relief, and the function of the muscle had remained perfectly normal. He had seen over an inch of the other spinal accessory nerve removed subsequently, yet the muscle had not been affected at all; hence he had held that it was useless in these cases of spasm to operate upon the spinal accessory nerve.

Dr. J. Arthur Booth said that he had had a case of spasmodic torticollis operated upon by section of the spinal accessory nerve. A little more than one inch had been excised, and the sterno-mastoid and part of the trapezius had been paralyzed as a result.

PHILADELPHIA NEUROLOGICAL SOCIETY.

January 28, 1901.

The President, Dr. Wm. G. Spiller, in the chair.

PARESIS SIMULATING BRAIN TUMOR.

Dr. Wharton Sinkler called attention to the fact that it is the experience of every neurologist that cases of paresis come under observation with symptoms which so closely resemble focal brain lesions that it is often difficult to believe that there is no gross lesion present. The convulsive seizures which occur as late symptoms of paresis are frequently Jacksonian in type. As the disease progresses the convulsions may be followed by transient hemiplegia and there may be aphasia. When these symptoms occur before the peculiar mental features of paresis are conspicuous, the diagnosis is difficult. Illustrative of these facts, the two following cases were reported:—

Case I.—A man 35 years of age with a history of syphilis. The patient had a very bad family history, as there were three brothers who were or had been insane, and an uncle had softening of the brain. The first symptom was a sudden attack of violent pain in the left eye. This was followed by double vision, and the patient consulted Dr. Oliver, who referred him to the writer. Under the use of potassium iodide and faradism the pain and double vision disappeared. Two years later the patient had convulsions of an epileptiform character. They were followed by severe headache, but there was no paresis. A little later the patient had an attack of excitement, and delusions of persecution with some grandiose ideas developed. On January 7, 1888, he had three or four convulsions. These were followed by aphasia and ptosis. Later another convulsion occurred which was followed by aphasia and loss of power in the right arm, which lasted for a few days. After this time the patient's mental symptoms became more prominent. There were periods of excitement and marked delusions of grandeur. The patient died about four years after the first convulsion. An autopsy revealed no gross lesions of the brain, but there was opacity of the membranes and an unusual amount of subarachnoid serum.

Case II.—A man of 32 years of age. He never had syphilis and had always been temperate and correct in his habits. Four years before he was seen by Dr. Sinkler, in altercation with a man he was struck a violent blow on the head,

which knocked him down, and in falling he struck his head against a bulk-window. When he got on his feet he was again knocked down by a blow on the side of his head, by his assailant. He walked home and was stunned and dazed for a short time, but there was no evidence of external injury. About two months later he began to have noises in the right ear and some impairment of hearing. About three years after the injury he began to have tremor of the hand, hesitation in speech, and some loss of memory. Soon after this time he had a seizure, in which there was a sense of numbness, which began in the right leg and extended to the arm and head. Two months later he had a similar attack and afterwards a third. He had drooping of the lid; numbness of the arm and leg and thickening of speech after these attacks. After a few hours the sensory disturbance passed off, but there was inclination to drag the leg. The patient's mental condition began to deteriorate; he became delusional and at times had periods of excitement. Eventually he fell into a state of dementia and died about two years after the onset of his symptoms. A careful examination of the brain by Dr. W. G. Spiller revealed lesions characteristic of paresis.

Dr. F. X. Dercum showed a large subcortical tumor of the occipital lobe that had caused right-sided hemiparesis and right homonymous hemianopsia, together with Wernicke's pupillary inaction sign as a distance symptom.

Dr. D. J. McCarthy said that in making the autopsy he had found the skull exceedingly thin, and over the tumor it was paper-like. The dura was very tense, especially on the affected side, and the cortex over the tumor was very soft. The growth showed the structure of a tuberculoma. The tubercle bacilli were not found, but in many tuberculomata it is difficult to find the bacilli on account of their scarcity.

Dr. Chas. K. Mills made some remarks on the localization of brain-tumors, especially with reference to the parietal and prefrontal regions, based on five cases in which the sites of tumors were located for the purpose of operation.

Dr. Mills also exhibited a subcortical tumor.

Dr. John K. Mitchell reported a case of endothelioma of the brain.

A CASE OF COMPLETE UNILATERAL OCULOMOTOR PALSY.

Dr. Riesman, after discussing the etiology and pathology of oculomotor palsies, presented a patient—a man thirty-nine years of age, with complete paralysis of the left oculo-

motor nerve. There was ptosis, and the internal superior and inferior recti and the inferior oblique muscles were paralyzed. The pupil was dilated *ad maximum*, and there was no reaction to light or in accommodation. The eyebrow on the left side was raised very high, owing to a tonic contraction of the occipito-frontalis. The visual fields were contracted, especially that of the left eye, and there was a mild neuroretinitis. Diplopia had existed for two days in the beginning of the eye trouble. There was no headache—only a sense of oppression and some dizziness. The patient had had a chancre six years previously, and had been treated, apparently with mercury, during a period of three months. Dr. Riesman placed the lesion in the trunk of the nerve, in front of its superficial origin on the inside of the crus, and believed that it was syphilitic in nature.¹

Dr. W. W. Keen said that he had been fortunate enough to see all of the five cases reported by Dr. Mills. One was an endothelioma, three of them were sarcomata beginning usually subcortically and bursting through the cortex. The fifth case presented a very peculiar condition; it seemed to be the result of a thrombosis of the middle cerebral artery producing degenerative changes in the area indicated. He at first began to remove the mass, but subsequently desisted when he found how large an opening in the skull would be required and how large an area of the brain was involved.

He dwelt upon the advantages of the modern method of making a large osteo-plastic flap. In the case of the boy he was in this way able to uncover a large area of the brain and expose the tumor. There was one symptom in this case which had not been alluded to and that was the presence of a distinct cracked-pot sound on percussing the skull. This he attributed to the separation between the edges of the bone caused by the large tumor, allowing vibration between their edges.

A serious question with reference to operation in these cases is the amount of injury done to the brain. In several of these cases the tumors were very large and the amount of injury done was considerable. In the case of the boy, the lateral ventricle was opened. This was shown by the change in the color of the blood due to the admixture of the cerebro-spinal fluid. No harm resulted and the boy recovered.

One feature in this case as in some of the others was the early recovery of the motor function. Within forty-eight hours the patient had recovered the ability to move the arm and the leg.

Two of the cases referred to died. Dr. Mitchell's case died as the result of the shock. The other case died as the result of hemorrhage into the brain. If he had drained, Dr. Keen thought that the

¹Since the presentation of the patient, there has been a marked improvement under anti-syphilitic medication. The ptosis has almost entirely disappeared, and there is considerable movement in the ocular muscles. Reaction to light and in accommodation can be sometimes obtained, but not always.

hemorrhage would not have caused death, but the opening was so large and the amount of tissue lost so great that if the cavity had been drained fungus cerebri would certainly have developed. The man did well for twenty-four or thirty hours, when symptoms of pressure developed and increased steadily until the time of his death. In the case of the boy Dr. Keen did not entirely close the wound, but packed it with iodoform gauze which was removed at the end of twenty-four hours. The opening was then closed by a suture introduced at the time of operation. In spite of the early closure, there is evidence of beginning fungus cerebri. In this case he proposed to do nothing beyond dressing the wound every day and cutting away the fungus if it protrudes beyond the scalp.

In the case of large tumors he thought that it was often desirable to do the operation in two stages. In the two fatal cases the result had not been due to doing the operation in one stage. In cases where the operation would be a prolonged one, or where the hemorrhage was great, he would prefer to do the operation in two stages instead of one.

He dwelt upon the importance of early operation in these cases. The rule laid down by Victor Horsley he considered a good one, that after treatment, especially by the iodides, has been continued for six weeks without beneficial results, operation if it is deemed at all possible should be done at once.

Dr. William J. Taylor referred to the occurrence of hemorrhage in some of these cases. In Dr. Mitchell's case the bleeding was general. There had been a large amount of blood from the scalp and a large flow of venous blood from the dura. In these cases he was more afraid of venous bleeding than of any other kind. He had seen cases die unquestionably from venous bleeding, but he had never seen one die from arterial bleeding. In one case of sarcoma in which the tumor had penetrated the skull, the operation had to be stopped on account of the hemorrhage from the scalp. The bleeding was with difficulty controlled by a continuous ligature around the edge of the flap. After two or three days the skull was opened and a portion of the sarcoma removed. Of late he had been in the habit of making a small trephine opening in order to gauge the thickness of the skull. In one of the cases the skull in some places was not over one-tenth of an inch in thickness.

Dr. George E. de Schweinitz, referring to the occurrence of optic neuritis as a symptom of intracranial growth, said that papillitis, which is synonymous with optic neuritis, may be designated choked disc when the elevation has reached two-thirds of a millimeter, or about 2.5 to 3 diopters, and is then one of the most important, if not the most important, general symptom of brain tumor. As there is still much dispute in regard to the pathology of this condition, it did not seem profitable to enter into the discussion further than to say that it must be conceded that two varieties of papillitis accompanying brain tumor are evident, one an edema of the disc and the other an inflammatory affection of the nerve and the nerve-head sometimes extending outward into the retina. Finally, there may be a commingling of these two conditions. All varieties are likely to be accompanied by a distension of the intervaginal sheath. Of more importance from the neurological standpoint is to determine the frequency with which choked disc accompanies brain tumor. Much statistical information on this point has been published, and

if an average of the observations is taken, it may be safely stated that fully 80 per cent. of brain tumors will some time or other in the course of their development originate this symptom. The speaker was of the opinion that the percentage was even higher, because it must be remembered that not infrequently papillitis was late in appearing, as, for example, in the case detailed by Dr. John K. Mitchell. Very important is the determination of the relative frequency of papillitis according to the situation of the tumor, and in this connection the following table compiled by Edmunds and Lawford was quoted:

LOCALITY OF TUMOR	OPTIC NEURITIS.	NO OPTIC NEURITIS.	TOTAL.	PER CENT. OF OPTIC NEURITIS.	PER CENT. WITHOUT OPTIC NEURITIS.
1. Anterior frontal convolutions..	8	2	10	80	20
2. Motor convolutions		12	12		100
3. Occipital lobes	5	4	9	55.5	44.5
4. In hemispheres	6	4	10	60	40
5. Ganglia at base	17	3	20	85	15
6. Temporo-sphenoidal lobes.....	1	2	3	33.3	66.6
7. Cerebellum	20	3	23	86.9	13.1
8. Medulla and pons.....	3	6	9	33.3	66.6
9. Meningeal growths at motor convolutions	4	1	65	80	20
10. Meningeal growths elsewhere...	4	2	6	66.6	33.3
Total	68	39	107		

From this analysis it was seen that there was a comparative immunity from optic neuritis of cases of tumor in the cortical motor area, while there was an increased frequency and severity of papillitis in cerebellar tumors. If all cases of tumor towards the convexity of the brain be added together there is a yield of 50 per cent. of optic neuritis, while those toward the base constitute 61 cases, with a percentage of 74 of optic neuritis.

Growths in two regions of the brain seldom, if ever, produce papillitis, namely, the medulla, and according to Rath, the hypophysis. In the latter situation there is some doubt as to the accuracy of this statement, but although tumors which involve both the medulla and the pons may be associated with optic neuritis, when the growth is strictly localized in the medulla, papillitis, if it ever occurs, must be extremely uncommon. A case in point was quoted by Dr. de Schweinitz in which a growth the size of a marble in the medulla had failed to produce the slightest sign of inflammation or edema of the nerve-head. Pursuing this subject of the relative frequency of optic neuritis, a second table was quoted, more extensive than the one of Edmunds and Lawford, and showed in some respects decidedly different results. This had been compiled by Dr. John Weeks of New York, and was as follows:

LOCATION	NO.	NO. OPTIC NEURITIS	UNILATERAL	DOUBLE OPTIC NEURITIS	PER CENT.
Frontal lobes	64	12	4	48	80.3
Temporo-sphenoidal	24	9	0	15	62.5
Motor area	113	46	3	64	59.2
Parieto-occipital	33	4	3	26	87.8
Brain surface	13	4	0	9	69.2
Centrum ovale	58	17	2	39	70.7
Corpora quadrigemina	19	0	0	19	100
Basal ganglia	36	15	0	22	61.1
Multiple	39	11	2	26	46.6
Corpus callosum	12	7	0	5	41.7
Pituitary body	18	9	0	9	50
Pineal gland	1	1	0	0	0
Crura	5	1	0	4	80
Pons	50	20	5	25	60
Cerebellum	164	21	4	139	87.2
Base of cranium	10	1	0	9	90
General	10	3	4	11	83.3
Total	677	180	27	470	69.4

This indicates that papillitis is most frequently found accompanying tumors of the corpora quadrigemina, and next those of the parieto-occipital lobe and cerebellum. More exceptional ophthalmoscopic appearances occurring in place of typical choked disc are unilateral optic neuritis and papillo-retinitis with star-shaped figure in the macula, exactly repeating the appearances seen in albuminuric retinitis. The significance of unilateral papillitis is given in the following table; compiled by Martin and Weeks: (See page 300.)

From this it is seen, as Dr. Weeks has pointed out, that the greater frequency of the occurrence of unilateral optic neuritis on the side of the tumor in so far as the frontal, temporo-sphenoidal and motor portion of the cerebrum is concerned, is as 4 to 1. A star-shaped figure in the macula due to infiltration and fatty change in the cone fibers may be seen in brain tumor, in albuminuric retinitis, in retinal hemorrhages occurring in young people and in some varieties of syphilitic neuro-retinitis. Therefore the idea that this appearance is diagnostic of Bright's disease must be set aside. Again, double papillitis, although highly significant of intracranial disease, especially of tumor or basilar meningitis, is not a pathognomonic sign, as it may be associated with Bright's disease, gout, and certain poisons which may or may not in their turn be connected with the intracranial lesion. Optic neuritis does not give information of the nature of the tumor which may cause it, although it may be the only sign of its presence. It occurs in all forms of neoplasm, although it is most frequently absent in tubercular tumors. Neither does neuritis afford evidence of the size of the growth, as it may be intense

LOCATION	NUMBER OF CASES ON THIS SIDE	NUMBER OF CASES ON OPPOSITE SIDE	TOTAL
Frontal	10	2	12
Temporo-sphenoidal	5	0	5
Motor	14	3	17
Parieto-occipital	2	4	6
Multiple	2	0	2
Basal ganglia	1	0	1
Centrum ovale	1	2	3
Corpora quadrigemina	1	0	1
Pituitary body	0	1	1
Pons and medulla	4	2	6
Cerebellum	1	3	3
General		1	1
Total	41	17	58
Per cent.	70.7	29.3	

with a small lesion, and slight or absent with a great one. But decided choked disc is more significant of tumor than slight papillitis. By itself choked disc, although highly significant of brain tumor, is of no localizing value, and must be associated with other confirmatory symptoms to be of absolute pathognomonic significance. Subsidence of a neuritis which has not greatly developed points to a certain extent to a subsidence of its intracranial cause, while sudden increase in papillitis, producing the variety which is known as choked disc, may indicate increase, if not of the size, at least of the irritative quality of the intracranial lesion. A very important matter is the vision in choked disc. As is well known, this may remain perfect for a long period of time. Therefore the testing of vision without ophthalmoscopic examination is valueless. In certain regions, for example, in the cerebellum, the growth is apt to be associated with early blindness, a fact of some significance. A very important matter not yet sufficiently studied, and particularly pointed out by Dr. Weeks in his investigations, is that defects of vision, and particularly defects in the visual field, are often due to a degeneration of the ganglion cells of the retina which is found in association with the optic neuritis. Such degenerations might readily produce symmetrical defects in the visual field, and therefore this pathological fact should be taken into account when the visual field is mapped for the purpose of attempting to localize an intracranial growth. There is a good deal of evidence to show that operations for the removal of intracranial tumors are frequently followed by a subsidence of the optic neuritis, although it sometimes happens that instead of a subsidence there is a marked increase in the papillitis, and in very rare cases, one of which has been reported by Dr. de Schweinitz and Dr. Thomson, a second attack of optic neuritis follows the trephining.

Although not strictly germane to the subject under discussion, as the symptom had been referred to, Dr. de Schweinitz desired to

say that Wernicke's symptom, or the hemiopic pupillary inaction, while exceedingly significant and of great value if present, was very difficult to demonstrate, so difficult, in fact, that some very accomplished observers have doubted its value. His own experience was that the ordinary crude methods employed, of simply throwing a beam of light in the eye with a magnifying glass were valueless. The best plan was to place the patient with his back to the source of light, illumine the face and the pupillary area with a large plane mirror, and while the patient's attention was steadily fixed on one point, to take a second mirror of stronger focus, as, for example, such a one as is attached to the ophthalmoscope, and cast a beam of light at different angles into the pupillary space. In all his experience he was not sure that he had seen this symptom incontrovertibly established except twice, one of these cases coming to autopsy and proving the correctness of the observation.

Dr. Spiller asked Dr. de Schweinitz whether he considered it justifiable to trephine when choked disc and certain symptoms suggesting brain tumor existed, although the growth could not be localized, *i.e.*, whether he considered it justifiable to trephine in the hope of preserving vision and modifying some of the symptoms of brain tumor. In some cases the mere opening of the skull seemed to have been of benefit.

Dr. de Schweinitz said he had no personal experience in this matter, although he was aware of the fact that one observer, Grosz, had quoted a number of instances in which simple trephining had been followed by a subsidence of the choked disc. On the other hand, as he had stated, trephining may be followed by an increase of the papillitis. On general principles he would not consider it justifiable to advocate trephining for the cure of optic neuritis.

Dr. E. A. Shumway referred to a case of Dr. Spiller's in which on making a microscopic examination, a minute sarcoma was found in the choroid, which was associated with an endothelioma of the brain. If this sarcoma had been found at the ophthalmoscopic examination, it probably would have been accepted as an indication that the brain tumor was a sarcoma.

Dr. F. X. Dercum said that in order that the symptoms of astereognosis should have a localizing value, it must be distinguished by certain features. As he had already shown, astereognosis may be present in disease of the peripheral nerves, of the spinal cord, of the medulla and of the brain. In astereognosis, due to disease of the peripheral nerves or of the tracts within the cord, the symptom has its origin in the fact that one or more of the impressions necessary to the forming of the mental image, does not reach the cortex by reason of the defect in the afferent pathways. If in a given case, on the other hand, all of the various cutaneous and other sensations, which are necessary to normal stereognosis, be preserved, and notwithstanding this astereognosis be present, we have a right to infer disease of the cortex, that is, all of the factors essential to stereognosis perception are being transmitted along the proper pathways and yet due to a want of proper combining power in the cortex, astereognosis is present.

In order that astereognosis should have a definite cortical localizing value, it must be associated with one or other of the following symptoms. There must either be present some sensory loss or some motor loss; there is present either paralysis or paresis or some defect of sensation, possibly a mere hypesthesia. At times a slight

ataxia may be the only motor symptom present with stereognostic loss. If any or all of these symptoms be present in a case of astereognosis, they justify the inference, other things equal, that we have a lesion in the posterior portion of the superior parietal lobule on the opposite side.

With regard to Wernicke's symptom, Dr. Dercum stated that he had observed it in one patient in whom he had been able to verify the symptom by post-mortem examination. This case has been published. In this patient the experiment was made in a very simple manner with a candle in a darkened room and the difference in the reaction of the iris to the candle with respect to the blind and normal halves of the retina was so decided that a tyro would have recognized it. As long as the candle was held in such a position that the rays fell upon the blind half of the retina the pupil remained dilated; the moment the candle was brought across the middle line and the rays fell upon the sound half of the retina, the iris promptly contracted. Dr. Dercum also said that he had observed this symptom in a patient still living in the Nervous Wards of the Philadelphia Hospital. In the case of the tumor presented by himself the Wernicke reaction was unmistakably present though the difference in the two responses of the iris was not as marked as that observed by him in the case which had been verified by autopsy. Dr. Dercum considered the symptom in the present case as due merely to pressure. In other words, it was a distance symptom. This is further rendered probable by the fact that the symptom had not been observed by a competent ophthalmologist some days before.

Dr. Charles K. Mills said that when astereognosis is of decided value in cerebral diagnosis, other symptoms are usually present; nevertheless he believed that astereognosis with disorders of sensibility and with ataxia may be present without motor paresis, in lesion of the superior parietal convolution.

Dr. W. G. Spiller referred to a case similar to that reported by Dr. Mitchell. The man had been struck on the forehead many years ago. Some years after the blow had been received he noticed that his head was enlarging, and still later he had paresis on the opposite side of his body. He had also optic neuritis and some difficulty in finding certain words although the tumor was not in the speech area. He was operated on but died from shock and hemorrhage. The tumor was of the same character as in Dr. Mitchell's case and in almost the same position. It grew from the dura and caused a large depression in the brain without infiltrating the brain.

Dr. Spiller also referred to the peculiar appearance presented by softening of the brain as seen in the living subject, as he had had an opportunity of seeing it at operation in one of the cases referred to by Dr. Keen. The comparison to baked custard made by Dr. W. J. Taylor Dr. Spiller considered very descriptive. On microscopical examination of the tissue removed, Dr. Spiller found a condition which might have been produced by syphilis, but might have been from other causes. The vessels were thickened, round-cell infiltration was intense, and numerous fatty granular cells were found in the cerebral tissues.

CHICAGO NEUROLOGICAL SOCIETY.

December 20, 1900.

The Vice-President, Dr. Hugh T. Patrick, in the chair.

POLIOENCEPHALITIS SUPERIOR IN A MAN THIRTY-
ONE YEARS OF AGE.

This case was reported by Dr. Church. The patient had been married five years, but had no children. Cashier by occupation. Family history presented several cases of tuberculosis, otherwise it was negative. The personal history of the patient was also without notable incident and venereal history was denied. For several years, however, he had used alcohol and tobacco freely, working very hard, with short hours of sleep but considerable outdoor athletic exercise.

August 19, 1899, in a very hot sun, he played golf all day without head covering. Forehead, face and scalp severely burned and the hair bleached by the sun. On the second day thereafter he noticed dimness of vision in both eyes, was compelled to hold the book at a distance, and there was also a little double vision. Examination of the eyes by competent oculists failed to detect any trouble in the fundus. There was, however, a tendency to outward squint and some rigidity of the pupils. He was given mercury by inunctions.

Two weeks later he came under observation, showing a slight ptosis on the left side, outward deviation of both eyes, pupils rigid to light and accommodation. Headache, vomiting, dizziness and other subjective disturbances absent. Temperature, pulse, respiration, urine and blood normal. He showed a little tendency to oversleep and during the day would drop asleep while driving. He seemed to be indifferent to subjects of ordinary interests and to the gravity of his condition. After 20 daily inunctions the gums were slightly affected and the mercury discontinued.

On the 30th day after the onset of symptoms his speech was a little muffled and there was some inco-ordination when walking with the eyes closed. The tendon reflexes which previously had been normal, became increased and there was a slight ankle-clonus on each side. During the night he had had involuntary urination.

On the 31st day the divergent squint subsided, apparently through paresis of the external rectus or involvement of the nuclei of the 6th nerve, and the pupils commenced to dilate. Vision for distance was still normal but there was no ac-

commodative action and the pupils responded neither to light nor accommodation. Static ataxia was decidedly pronounced. The temperature had a slight subnormal tendency. There was mental hebetude.

On the 32nd day he was unable to stand, pupils were dilated *ad maximum*, the eyes perfectly immobile, ptosis on both sides partially developed. Temperature commencing to ascend, reached 100.2. The next day double ptosis was complete, reflex excitability was greatly increased so that the patient was almost tetanized as he lay apathetically in bed. Babinski's reflex was present on each side. Temperature 101.2, pulse 120. Next day his condition was worse; he had some difficulty in swallowing. Coma existed most of the day. The following day temperature rapidly ascended to 108, with a falling pulse at the same time and he died after twenty-four hours of absolute coma.

Post-mortem examination was absolutely negative, except healed foci of tuberculosis in each apex about as large as a walnut.

Examination of specimens and serial sections made by Dr. Futterer show areas of more or less well-outlined softening in the corpora quadrigemina, pons, peduncles, internal and external capsule, principally upon the right side. The area in the external capsule involves the claustrum in its anterior portion with an upward extension to the lower level of the cortex. The lesions in the peduncles are confined to their lower parts and are small, while others involve the nuclei of the oculomotorius, trochlearis and abducens. Changes are decidedly inflammatory and blood vessels thickly surrounded by masses of leucocytes appear in the midst of areas of degeneration. Here and there is also well developed hyaline degeneration of the walls of the blood vessels.

Dr. Church called attention to the fact that a series of cases showing gradations between acute polioencephalitis and asthenic bulbar paralysis or myasthenia gravis could be found in the literature, and that in this case the sequence of events might perhaps be considered as follows: A tubercular lesion inducing some hyaline degeneration in the vessels, subsequently traumatism in the shape of sunburn, the action of toxic or infectious agencies producing inflammatory changes in the area of lowered resistance, and polioencephalitis with additional foci of inflammatory disturbance.

Dr. Church suggested the possibility of a series of pathological conditions in which polioencephalitis formed one end and myasthenia gravis the other. Dr. Sanger Brown thought that this could

hardly be the case as the tendency of myasthenia gravis is towards recovery. Dr. Patrick agreed with Dr. Church and showed sections from a case which apparently occupied middle ground between the two conditions mentioned. Dr. Patrick's sections through various areas of the cerebro-spinal axis showed everywhere vast engorgement of the capillaries and possibly some early degeneration of cells, the patient having died before further destruction had taken place.

A STUDY IN THE HEMATOLOGY OF NEURASTHENIA.

Dr. Lodor said that the title neurasthenia would seem to cover a pathological condition far more widespread than the term itself might indicate. There is scarcely an organ or tissue in the body which does not show more or less deviation from the normal.

In taking up its hematology, facts appear which of themselves are confusing and contradictory. One of the first symptoms noticeable in neurasthenia is the evident anemia, or if not anemia, hemic change. In an able and suggestive article published in the *Medical Record*, June 25, 1898, Mary Putnam Jacobi points out that many neurasthenics and also patients evidently anemic, have a very high blood count, and gives the history and count of several patients where the reds were over 5,500,000. One patient, a palid neurasthenic, had a red count of 6,660,000; whites, 37,777. Following suggestions of S. Weir Mitchell, Dr. J. K. Mitchell has made a very careful and exhaustive study of many neurasthenics, finding a large per cent. of them evidently anemic and yet with a blood count either normal or supranormal. Such observers as Mitchell, Oliver, Cabot, Cheron Vigoroux, have noticed and noted the changeableness of the red count owing to variation in the condition of the blood-drop after massage, static electricity, etc.

It is curious that it never occurred to these careful observers to put together the results obtained by the various means of blood examination. No tissue of the body is so changeable or so changing, as the blood, and before any fair conclusions can be drawn certain facts of its condition must be obtained, as:

- (1) Its specific gravity.
- (2) Chemical composition.
- (3) Rate of flow and caliber of vessels, including vasomotor control, as the red and white corpuscles do not move with the same velocity, the white tending to lag and stick against the blood vessel wall.

- (4) Temperature of the part furnishing blood for examination.
- (5) Number of reds and number of whites.
- (6) Hemoglobin value in color.
- (7) Bulk value of corpuscular elements as determined by the hematokrit.
- (8) Biochemical activity of cell as manifested by its ability to take up acid or alkaline staining reagents.
- (9) The age of the corpuscular elements, a point not practically discoverable clinically, but bearing largely upon the condition of the patient, and possibly discoverable by *a priori* reasoning.
- (10) Its bacteriology.

In experimental work done by Drs. John Holdan and J. Lorrain Smith, *Jour. of Phys.*, 1894, p. 465, to determine the different oxygen capacities of red blood corpuscles, several data were obtained which aid in discovering the age of corpuscles. When blood is centrifugated, the heaviest corpuscles naturally are thrown to the periphery. These observers took specimens from this heavy outer layer of corpuscles and found that they had an increase of 20 per cent. of oxygen carrying capacity over the layer near the center of centrifugation. Size of corpuscles, according to their statements, in no way influenced oxygen carrying capacity. A still more interesting point was the fact that blood drawn from animals previously bled, had a higher oxygen capacity than that obtained before such bleeding. While such facts were noted, the evident conclusion was not drawn, namely, that the heavy corpuscles were the new ones and the light corpuscles with enfeebled oxygen carrying capacity, were old.

Premising so much, Dr. Lodor spoke of observations made first, in the examination of choreics and afterward carried on in neurasthenics. Patients coming into the examining room from an outside temperature below freezing, showed for some time a marked decrease in the solid constituents of the blood amounting not infrequently, to 10 per cent. by bulk as shown by the hematokrit over readings obtained in former examination, not only this but apparently an increase in the proportion of reds over whites. When the patient was thoroughly warmed this discrepancy disappeared. Patients examined after Franklinization showed a decided increase in bulk of solids and number of reds over readings obtained before the electricity was used. Immersing the hand of a well warmed patient into cold water rapidly lowered the bulk of

reds in circulation. From many examinations made, both in health and disease, it was found that cold uniformly lowered the bulk of solids in peripheral blood and increased the apparent quantity of reds over whites. On the other hand, warmth restored the balance and massage and electricity uniformly raised the bulk of solids above normal for the individual, thus giving a sway from the abscissa line of normal, to from 2 to 10 per cent. below to 2 to 10 per cent. above. A natural deduction would be that some attention should be given and allowance made in the blood count in patients with cold, clammy hands and extremities. The small size of blood vessels and the vaso-motor constriction seen in some neurasthenics may account for part of the apparent hemic disturbance. Furthermore, change of atmospheric pressure materially changes the number of reds as might be expected. A marked increase in the quantity of solids in the blood from a finger was always obtained by rotating the arm rapidly. Removal of a patient to an altitude causes reds to appear in greater number in peripheral vessels, so that the remarkable gain noted at times in the hemic condition of patients taken to altitudes may be, and probably is, factitious, due to the altitude and not to an actual increase in the number of reds in the general circuit.

Going back to the study of the red blood column as shown in the hematokrit and studying it more in detail, there seem to be three areas in it, in normal blood: a heavy area found at the periphery, a middle weight area in the center, and a lighter weight area at the proximal end of the clot.

Dr. Lodor found that blood taken from these three areas varies much in its capacity to take up acid stains. The heavy blood from the periphery stains deeply and quickly and evenly with the acid stains: The middle area stains fairly well with acid stains, and blood from the proximal end of the tube but slightly. There are certain other features of the blood from this last area which attract attention. The corpuscle itself is exceedingly lean, oftentimes almost dumb-bell shaped when on edge, and does not stain evenly. The cytoplasm is apparently pushed to an outside rim with cell wall collapsed and touching in the center, the cell contents having lost almost all biochemic activity.

Putting the findings together, namely, that in normal blood we have circulating red cells of very uneven value, and that some of them are heavy and stain well, that in an animal bled and allowed to recuperate we have a great preponderance of heavy red cells staining deeply, and that in both

instances the heavy cells have a greater oxygen carrying capacity, the conclusion would seem inevitable that these heavy cells are new or recently formed.

Applying these facts, and conclusions legitimately drawn from these facts, to findings in the examination of the blood of neurasthenics, it would appear possible to reconcile many statements apparently diametrically opposed. In all cases coming under Dr. Lodor's observation, there seems to be some hemic disturbance, no matter whether the case has as a basis, an auto-toxemia, a toxemia as a sequel of preceding disease, or is apparently purely acquired or is of distinctly hereditary type. Each type may have some particularly prominent symptom, a sexual one, or gastric one, but be the type or special symptom what it may, if the disease persists any length of time there presently appears a condition of blood fairly constant and typical of the disease. The reds may or may not be reduced in count, at times may be even above count, but the individual erythrocyte has undergone a change so that it resembles the cells in normal blood, which Dr. Lodor has called for want of a better name—old cells. In many cells the cytoplasm in stained specimens seems pushed out to the periphery to such an extent that the cell becomes dumb-bell shaped instead of the normal lenticular or biscuit shape. As a result the cells pack together closely and show a marked diminution in volume by the hematokrit. The oxygen carrying capacity is lowered and in consequence the hemoglobin is deficient in color test. The blood in neurasthenia would seem to be poor in oxygen carrying capacity, and not only this but owing to the poor vaso-motor control the peripheral blood at least varies much in its character. Time and again Dr. Lodor has noticed the blood issuing from a puncture not well mixed, so that serum came first and then, apparently, a mass of corpuscles. Such findings lead at once to speculation. Certainly many cases of neurasthenia have some form of toxemia as an underlying cause. The value of all means of hemogenesis is at once apparent and if it were necessary, further proof is furnished for the value of massage, electricity and over-feeding.

Dr. Patrick wished to know what form of static current was used in the experimentation, the reply indicating that any form which produced skin irritation, but particularly the short spark, would produce the conditions as indicated. Dr. Dewey thought that any form of rubefaction would cause similar conditions to those mentioned in the paper. Dr. Sanger Brown extended the thanks of the society to the writer for original work done and said that while nothing new in the way of treatment was claimed, certain pathological conditions were happily explained.

Periscope.

CLINICAL NEUROLOGY.

UEBER DIE BEZIEHUNGEN ZWISCHEN ECLAMPSIA INFANTUM UND EPILEPSIE DES KINDESALTERS (Relations between Infantile Eclampsia and Epilepsy of Childhood). Lewinsky (Die ärztliche Praxis, Dec. 1, 1900).

If it is assumed that all attacks of infantile convulsions have the same pathogeny, no distinction between transient and non-recurring eclamptic, hysterical, and tetanoid attacks on the one hand, and true epilepsy on the other, can be made. Some authorities have assumed that these two groups of affections are identical, others that they are similar but not identical, others again that they are wholly dissimilar. The causes of eclampsia often lie unmistakably in such irritants as worms, or in the poison of acute infectious diseases. Nevertheless, eclampsia may occur without any of these causes, and here epilepsy is suggested. Some authors regard all eclampsia without adequate cause as epileptic. There is one causal element however, connected with true epilepsy, and this is psychical fright, etc. As genuine epilepsy in much older individuals may follow a mental shock; *i.e.*, may first appear after such an experience, so may true epilepsy first appear in infancy. Yet eclampsia at the same age may also be called forth by fright, therefore we cannot tell in a case of infantile convulsions supervening after fright, whether we have to do with epilepsy or with eclampsia. As far as the symptoms are concerned there is absolutely no difference. All typical symptoms are present in each case. Further, while simple eclamptic convulsions are usually well-defined, we see cases which run parallel with the lighter attacks of epilepsy, *i.e.*, with petit mal. Weiss uses the term *eclampsia mitior* to describe these cases. The non-epileptic character of these seizures is shown by the occurrence of spontaneous recovery at puberty. Some authors attempt to show that in these eclamptic cases some consciousness is always retained, and that while the seizures succeed one another more rapidly than epileptic attacks, the consciousness between the paroxysms is not any way affected. Such cases injure themselves less than epileptics. In adults the distinctions between epilepsy and simple eclamptic or epileptiform convulsions are much more readily made. Soltmann has demonstrated the existence of all the various forms of aura in childhood, not only in epilepsy, but in eclampsia as well. Demme claims that the aura of eclampsia is seldom or never subjective. Eclampsia in childhood is more serious than epilepsy in one way, which serves as a point for differentiation. Not infrequently the eclamptic child may die of asphyxia. Soltmann even gives eclampsia a death rate from 7% to 10%. It is very doubtful if true epilepsy of childhood has any mortality whatever.

An attempt at differentiation is of the utmost importance, since the management of infantile eclampsia and that of infantile epilepsy would differ radically. Most authorities differ with the author and hold that all convulsive seizures in infancy or old age without adequate cause, are essentially epileptic, depending upon the degree of predisposition for their continuance in the patient's after-life. (Binswanger, Freud, Féré, Voisin).

CLARK.

UEBER ALKOHOLWIRKUNGEN BEI EPILEPTISCHEN UND SCHWACHSINNIGEN (The Effect of Alcohol on Epileptics and Feeble-minded). Kolle (Zeitschrift für die Behandlung Schwachsinniger und Epileptischer, November, 1900).

Kolle states that it is well known that epileptics are intolerant towards alcohol and are especially prone to develop the acute alcoholic psychoses. Moderate quantities of alcohol have been known to produce the status epilepticus, mania, etc. Alcohol used immoderately often determines the first appearance of epilepsy.

Case I.—An epileptic indulged in beer and fell asleep. A comrade tweaked his nose, telling him to wake up. The epileptic without any interval whatever, drew his knife and stabbed his friend. Afterwards he had no recollection of it. Kolle relates half a dozen histories of similar experiences, some being in idiots.

Case II.—An epileptic entered a drinking place and after taking some wine got into a dispute in the course of which he drew a revolver and shot at his companions. He had no recollection of the deed afterward.

Case III.—An epileptic got drunk and finding his wife absent from home, poured petroleum over the floor of the room, lighted it, then went out and gave an alarm of fire, and the latter was extinguished. The epileptic remembered nothing of these events in an after examination, but the author fails to make clear whether the amnesia of these cases is false or genuine. CLARK.

BEITRÄGE ZUR THOMSEN'SCHEN KRANKHEIT (Contribution to Thomsen's Disease). Julius Mahler (Wiener klin. Wochenschrift, No. 52, Dec. 27, 1900, p. 1219).

In the case reported by Mahler energetic movements after rest caused rigidity and hardness of the muscles concerned. The contractions in these muscles persisted several seconds after cessation of voluntary movement. In continued movements of the same character the muscular rigidity gradually disappeared and the movements were performed normally. The voluntary muscles were exceedingly well developed but the motor power was slight in proportion to the size of the muscles. The condition was that known as Thomsen's disease. In passive motion the rigidity was absent and the muscles were not abnormally hard. In addition to these symptoms there were others not usually seen in Thomsen's disease. If the voluntary motions were not very energetic, subjective and objective weakness of the muscles concerned in the movements occurred and these muscles were very soft, but this weakness was not dependent upon cold as in Eulenberg's paramyotonia. The weakness was manifested in the commencement of slow movements, indifferently whether the room was warm or cold, and disappeared if movements of the same character were continued. SPILLER.

LE DIAGNOSE HISTOLOGIQUE DE RABES (Histological Diagnosis of Hydrophobia). C. Franca (Comptes rend. de la soc. de biologie, Nov. 30, 1900).

The great practical importance of the histological method of diagnosing hydrophobia introduced, led the author to further investigate it. The animals used by Van Gehuchten and Nélis died as the result of the disease; most of the material sent to laboratories for

examination consists of tissue from animals killed before the disease has killed them. To find out in how far the histological method could be relied on with such tissues was the main object of the present study. His conclusions were: In rabid animals which died prematurely the ganglionic cell changes described by Van Gehuchten and Nélis were sometimes absent. In these animals it is the rule to find round extracapsular elements in greater or less numbers. The bulbar lesions appeared on the whole more intense than those of the ganglion cells. It is impossible to rely wholly on the microscopic findings in the nervous symptoms of prematurely-dead rabid animals in establishing the diagnosis of hydrophobia. JELLIFFE.

DIE SUBJECTIVEN BESCHWERDEN DER NEURASTHENIKER (Subjective Symptoms of Neurasthenia). L. Hoeflmayr (Münch. med. Woch. 47, 1900, Nov. 13, p. 1594).

The author says that the most disagreeable and alarming symptoms of neurasthenia, are those due to irritation of the vagus. The patient is usually taken at night and is seen struggling with extreme dyspnea and cardiac pain, and seems to be in the last stages of organic heart lesion. Cold perspiration usually covers the entire body; the lower extremities feel cold, and the pulse is increased in frequency and often arrhythmic, though not weak. A history of constipation can usually be elicited and a large dose of castor oil generally brings relief, so that it is probable that the symptoms are due to irritation of the end-filaments of the vagus in the intestines through gases of putrefaction. Headache is another very common and disagreeable symptom of nervous exhaustion which may also find an explanation in auto-intoxication. JELLIFFE.

OPTISCHE NEURITE IM CHLOROSE (Optical Neuritis in Chlorosis). A. Englehardt (Münch. med. Woch., Sept. 4, 1900).

This condition is occasionally seen in chlorosis, but cases are rare in which it constitutes the whole clinical picture. The patient had a moderate diminution of the amount of hemoglobin and in the number of red cells. There was complete blindness, headache, anesthesia, paralysis and other nervous symptoms, and the diagnosis of brain tumor was very suggestive, especially when later in the disease localizing symptoms in the form of epileptic convulsions appeared. The autopsy revealed nothing but extreme dryness and anemia of the brain tissues, and left only anemia to explain the symptoms. JELLIFFE.

UEBER DIE STÖRUNGEN DER GEBERDENSPRACHE (On Disturbances of Pantomime Speech [Animia]). J. Mazurkiewicz (Jahrbücher für Psychiatrie und Neurologie, Vol. 19, 1900, p. 514).

This condition is comparatively rare. In 75 cases of aphasia collected by Naunyn there were four in which this speech disturbance was noticed. The author is able to add three cases of his own from Anton's clinic.

Case I.—Man 25 years old, with previous history of articular rheumatism. Apoplectic stroke which resulted in right-sided hemiplegia with aphasia. Stenosis and insufficiency of aortic valve with good compensation. Two other attacks similar in nature to the first further influenced the patient's condition. The diagnosis of embolus of the second branch of the arteria fossæ Sylvie was made.

The aphasic state was as follows: The patient had formerly been master of two languages. The comprehension of these remained but the articulation, with the exception of a few syllables, disappeared. The clinical picture was that of a typical motor aphasia, *typus Broca* or *Lichtheim's cortical aphasia*. In the further examination of the patient's intelligence, it was found that he could not express the results of the simplest mathematical calculation. When he was told to use his fingers in counting, he was unable to do so. The attempt to trace out geometrical figures by means of gestures was a failure. If an object was placed before him he succeeded after a fashion in tracing out its general form. When the object was removed, it was impossible for him to do this. In addition he was unable to pantomime any common action, such as praying, eating, etc. For example, when asked to show by gestures the use of a pen, it was impossible for him to go through the movements of writing with one. The understanding of pantomime speech remained perfectly normal. Imitation of pantomime movements was accomplished almost always with skill and confidence. It is interesting to note in this case that improvement in the mimic speech kept pace with the improvement in the aphasia.

Case II.—As a result of a blow on the head in the temporal region, temporary unconsciousness. A difficulty in understanding spoken words followed. No paresis. General arterio-sclerosis of a high grade. Voluntary speech retained but somewhat confused, and at times paraphasic in character. The clinical picture was that of *Lichtheim's cortical sensory aphasia*, with the difference that copying was impossible. He used spontaneously only the most primitive gestures, such signs as yes and no, and had inability to do things. Other pantomime gestures were not employed at all, although they could have aided him in expressing things, the proper words of which were not at his command. His understanding of pantomime movements was very slight. He did not recognize the simplest geometrical figures when traced out by gestures. The patient died with symptoms pointing to increased intracerebral pressure. Anatomical diagnosis, tumor of the occipital lobes of the left side growing towards the internal capsule.

Case III.—Patient sent to the hospital with the history of mental disturbance of a vague nature. Understands the nature of questions asked him. Speaks spontaneously freely enough, but uses incomplete sentences and at times paraphasic. The diagnosis of *Lichtheim's cortical aphasia* best describes his condition. He cannot comprehend pantomime speech and makes no use of gestures at all in attempting to express himself. Geometrical figures not recognized. The origin and significance of pantomime speech from a psychological point of view is analysed by the author as well as the consideration of the various theories advanced by Wundt, Anton, Meynert, and others. The position of this form of speech is thus stated: Mimic speech plays the rôle of a connecting link between sensory stimuli and an individual's reaction to the same (expression of feeling), on the one hand, and the spoken or written word on the other. For a clearer understanding of the nature of pantomime speech a more careful clinical study of aphasics is necessary in order to determine the failure or retention of a conception of gestures in these cases.

SCHWAB.

UEBER DIE HEREDITÄRE PROGRESSIVE SPINAL MUSKELATROPHIE IM KINDESALTER (Hereditary Muscular Atrophy in Children). J.

Hoffmann (Münch. med. Wochenschrift, 47, 1900, Nov. 27, p. 1649).

Hoffmann divides the muscular atrophies into muscular, neural and spinal. The latter, of distinct familial and hereditary type, though rare, especially claims the author's attention on account of the ease with which it can often be diagnosed during life. The following peculiarities are noted: Children, who are born of healthy parents and without the aid of forceps, and whose first months of life have been normal, are attacked by the disease between their fifth and ninth months. In the course of weeks or months the motions in the hips become more and more weak, and this without the appearance of any acute symptoms of infection, such as vomiting, diarrhea, or convulsions. Walking, if it has already been begun, will become impossible. Weakness of the dorsal and abdominal musculature soon manifests itself. The disease progresses to the upper extremities and neck, so that eventually the entire system of muscles is more or less paralyzed. The cranial nerves, with the sole exception of the spinal part of the accessorius, are not involved. Atrophy of the muscles, which may be hidden by a well-developed fatty deposit in the subcutaneous tissues, reaction of degeneration, loss of patellar reflex, contracture and a kyphoscoliotic curvature of the spine are found. On the other hand, the mental faculties and sensation are rarely affected except for occasional transient pains. A cure is impossible despite the free use of saline baths, strychnine, phosphorus, the iodides, electricity and quinine; death, from pulmonary complications, invariably occurs from 1 to 4 years. Bulbar symptoms or muscular hypertrophy or pseudohypertrophy have not been observed. Pathologically there is a symmetrical degeneration of the neurones of all nerves below the hypoglossal, of the multipolar ganglion cells of the anterior horns and of the intra- and extramedullary portions of the anterior roots. The brain and the white columns of the cord are unchanged. The cause of the disease is unknown, but is probably due to an inherited weakness of the parts involved.

JELLIFFE.

MITTHEILUNG ÜBER EINEN FALL VON TETANIE NACH INTOXICATION (Tetany following Intoxication). F. Dammer (Münch. med. Woch. 47, 1900. Nov. 13, p. 1587).

The author relates the symptoms of a patient who was treated with male fern and calomel for tapeworm and who, soon after the expulsion of the head, developed typical symptoms of tetany with both Trousseau's and Chvostek's symptoms present. Since the ordinary causes of tetany were absent and since calomel is not known to cause tetany, the intoxication was ascribed to the male fern, which is known to cause nervous symptoms of a less-pronounced character.

JELLIFFE.

UEBER EINEN FALL VON MYELITIS APOPLECTICA (Concerning a Case of Myelitis Apoplectica). George Flatau (Centralblatt für Nervenheilkunde und Psychiatrie, Jan. 1901, p. 18).

A boy of sixteen years had an abscess of the tooth and probably also one of the antrum of Highmore. He awoke one morning twenty years before he came under Flatau's observation, with paresthesia of the right lower limb and paralysis of the left upper and left lower limbs. Retention of urine persisted fourteen days, and there

was also obstinate constipation. At the time Flatau's report was written no paralysis was found in the left lower limb, but both limbs of the left side were less well developed than those of the right side, and some of the muscles of the left upper limb were paralyzed and exhibited reaction of degeneration. Flatau believed the case was one of myelitis apopletica following the abscesses mentioned.

SPILLER.

PATHOLOGY.

LE PHENOMENE DE LA CHROMATOLYSE APRES LE RESECTION DU NERF PNEUMOGASTRIQUE (The Phenomena of Chromatolysis, following the Resection of the Pneumogastric Nerve). C. Ladame (Nouvelle Iconographie de la Salpêtrière, 13th year, 1900, Nos. 4, 5 and 6, p. 301).

This is a very thorough study of the subject, extending through three numbers of the journal. The paper is divided into six main divisions. (1) A consideration of the numerous and varied results obtained by the Nissl method in regard to the finer anatomical structure of the nerve cell and its lesion. Some special modifications of this method, especially the procedure of Van Gehuchten. The special technic employed in this research. (2) A résumé of our knowledge of the finer anatomy of the nervous elements. (3) The study of chromatolysis in general. (4) A critical analysis and a description of the sections of the ganglionic plexus of the bulbar region in connection with the resected pneumogastric. (5) The interpretation of the phenomena observed, and lastly the conclusions derived from the study. The animals used in the experiments were rabbits, dogs, and cats, two of each. All were operated on in the same way. The animals were chloroformed and the pneumogastric nerve was resected in the cervical region for a distance of 1 to 2 cm. After an interval varying from 7 to 195 days, the animals were killed always by chloroform and examined by the methods described. The specimen studies for this paper were cut serially in paraffin and stained with toluidin blue. The preference was given to the latter rather than to methylene blue on account of the more simple manipulation and a more exact differentiation. In regard to the phenomenon of chromatolysis in general the author concludes that it differs according to the case, being unlike in sensory and in motor neurones. It is further not the same in all animals, varying according to the age and species. It also varies according to the mode of experiment and the nature of the lesion. It is necessary then always to specify exactly the conditions under which an experiment is made and the observation noticed in each case. The following are the conclusions which the author sets down as the result of his work. (1) The chromatolysis of the plexiform ganglion of the bulbar nuclei of the vagus is a constant phenomenon following the resection of the pneumogastric or vago-sympathetic (dog) of the neck. (2) Chromatolysis is characterized by the disintegration and the disappearance of the chromatin blocks and by the migration of the nucleus. (3) Turgescence is not a regular phenomenon of chromatolysis. (4) The nucleus is active in its displacement during the phenomenon of chromatolysis. (5) The phenomena of reaction and repair are different in the dog, cat and rabbit. (6) Repair is as constant a phenomenon in motor as in sensory cells. (7) The sensory cells are more rapidly

affected, longer and more profoundly, in repair and reaction than the motor cells. (8) The number of cells is practically the same in the normal and abnormal plexiform ganglion both of the cat and dog 118, 122, and 147 days after resection of the pneumogastric. (9) In the dog at the 122d day and in the cat at the 147th day after the resection of the vagus the dorsal nucleus of the tenth nerve presented no diminution in the number of its elements, although it was otherwise pathologically affected. (10) Dogs at the 22d and the 122d days presented chromatolysis in the ganglion the nerve of which had not been destroyed, as well as in the nucleus of the resected nerve. (11) The dorsal nucleus and the plexiform ganglion of the vagus nerve in the rabbit at the 195th day after the resection showed a definite reduction of nervous elements, half of which had disappeared. (12) The chromatin substance plays an accessory rôle in the normal function of nervous elements. (13) The union of two ends of the resected nerve is in no sense indispensable for the replacing of the reserve chromatin of the nerve cells. (14) The vacuolization is a form of degenerative cell process. (15) In the cat at the 147th day the plexiform ganglion, the nerve of which had been forcibly compressed between the blades of a forceps, presented no evidence of chromatolysis.

SCHWAB.

PSYCHIATRY.

OBSERVATIONS ON THE CONDITION OF THE BLOOD IN THE INSANE BASED ON ONE HUNDRED EXAMINATIONS. By F. Percival Mackie (The Journal of Mental Science, Vol. 47, 1901, p. 34).

In this series the author has tried to take into account the various modifications that change the composition of the blood and has examined 100 patients, as follows, general paresis 16, epilepsy 40, melancholia 20, mania 13, miscellany 14. The author concludes that in looking through the grand averages one cannot help noting the very slight departure from normal which exists in the blood of insane patients. Although in some cases slight changes are noted with some degree of constancy, yet they are so insignificant that they do not appear to throw any light on the pathology, or give any indication of treatment in any class of case. When they do occur, there is good reason to suppose that the alteration in the blood state is quite secondary to the mental change; and further, the examination of the blood in the present state of our knowledge is not even an aid to prognosis or to diagnosis.

JELLIFFE.

SPÄT GENESUNG BEI GEISTESKRANKHEITEN (Late Recoveries in Insanity). Kreuser (Allg. Zeitschrift für Psychiatrie, 1900, Bd. lvii, Hft. 6, S. 771).

Alluding to the fact that the division of mental disease into acute and chronic forms is to a considerable extent relative and arbitrary, the author proceeds to discuss the question of duration of different forms of insanity, and the criteria of recovery. The matter seems to resolve itself more into a question of diagnosis and prognosis than into one of treatment for it is pretty clearly shown that certain forms of mental disease have a much greater tendency to end in dementia than others, which may last for a greater or less number of years without proceeding to this end. In a general way recoveries after the persistence of the mental disturbance for three years, are to be

called late recoveries. These belong to the exceptions, a statistical inquiry on 7698 cases in 3 institutions, giving the percentage to total admissions as about 1 per cent. to total recoveries at less than 5 per cent. As influences favoring late recovery, are absence of hereditary predisposition, age (occurrence of the climacteric), and occasionally acute intercurrent disease or injury. In conclusion the author tabulates 22 cases from various sources, and gives condensed histories of twelve cases occurring in his own institution. He has included no cases which have not remained well at least a year after their discharge.

ALLEN.

EIN BEITRAG ZUR KENNTNISS DER EPILEPTISCHEN BEWUSSTSEINSTÖRUNGEN MIT ERHALTENER ERINNERUNG (Disturbance of Consciousness in Epilepsy with Retention of Memory). K. Bonhoeffer Centralbl. f. Nervenheilkunde und Psychiatrie, October, 1900).

E. N., basketmaker, aged 23 years; father of a very irascible temper, who died by suicide; a brother had sick headaches. Patient developed slowly and had convulsions up to the age of five years. These ceased as his school life began. He was very backward in school. He was troubled by palpitation, dyspnea, etc. After leaving school, he was able to support himself by his trade as basketmaker. Not long before he came under treatment he was accused of numerous attempts at arson. It appeared that he drank to some extent and was very susceptible to the influence of alcoholics; would be made irresponsible while to all outward appearances he remained sober. On these occasions he had set fire to property. He claimed to have had an irresistible desire to see a conflagration, but when asked to explain why he set fire to houses which he knew were occupied by people, he stated that the possibility of destroying life had never occurred to him. In the fires which he had set he helped to extinguish the flames because he belonged to the volunteer fire brigade, and would have been fined had he not been present. Numerous other acts are related showing disturbances of consciousness without total loss of memory. Patient exhibited some stigmata of degeneration. It was evident that these peculiar impulses to crime belonged to epilepsy. During these periods the patient did not think and act like a normal man, nor even like himself. His desires and judgment were changed for the time. Nevertheless, he remembered all he did and why he did it, although his then state of mind appeared to his normal consciousness as foolish and his acts as unnecessary. On these occasions he had generally drunk something but not enough to intoxicate a normal individual. His retention of memory would show that these acts were not examples of pathological drunkenness. Indeed, the patient's recollection on these occasions was unusually acute. Even if the alcohol played a part in the causation of these seizures, which it undoubtedly did, the fact remains that the predisposition was already present, and furnished by neuropathic inheritance and makeup.

Seizures of this sort from any source, are seldom enough associated with keen remembrance. The difference in character shown by the patient when in the midst of these attacks, is another point of interest, as under ordinary circumstances there would be some analogy between the state of mind during the seizures and the habitual state. The patient was a natural hypochondriac and appeared to have a constant sense of dread and foreboding. This state was in no wise augmented during his seizures. The patient in fact appeared

while remembering all the facts, to regard them as no part of himself, but as if directed by another's will. CLARK.

UEBER. HALLUCINATIONEN VORZÜGLICH GESICHTS-HALLUCINATIONEN AUF DER GRUNDLAGE VON CUTAN-MOTORISCHEN ZUSTÄNDEN UND AUF DERJENIGEN VON VERGANGENEN GESICHTS-EINDRÜCKEN (On Hallucinations, especially Visual Hallucinations, on the Basis of Cutaneo-Motor Conditions, and Past Visual Impressions). Mourly-Vold (Allg. Zeitschrift für Psychiatrie, 1900, lvii, 6, S. 834).

In this article the writer attempts to apply certain facts with regard to dream perceptions experimentally obtained, to the elucidation of so-called waking hallucinations. We are too prone, he thinks, to attribute abnormal visual perceptions for which no external cause can be perceived, to direct central irritation of the visual center, and his paper is almost entirely devoted to trying to prove that peripheral impressions, mainly those arising from the skin and from the muscles, may in a reflex manner and by association, call up certain visual images in the form of hallucinations. He has for some years been occupying himself with the study of dreams, attempting to influence them, through certain external stimuli, and has made a number of experiments upon a great many persons of both sexes, of which the following is a type. A number of subjects had one or both feet so bandaged as to produce strong plantar flexion, or put on one or both hands gloves which caused some flexion of the fingers, retaining them during the whole night. Each person was ordered to note his position on awakening and the nature of whatever dream he may have had, to record them as promptly as possible, and to fill out a blank scheme of questions bearing on the subject. As a control, the same methods of peripheral irritation were applied on the following evening and followed by attempts at suggestion. It was found that the character of the dreams was influenced, and more by the motor than by the cutaneous irritation, positive results being obtained in from 50 to 80 per cent. of the subjects, depending upon external circumstances.

From cutaneous irritation the subject had in his dream a more or less accurate perception of the irritating object applied to himself or to another person, or if an object related in some manner to the irritating object or to the irritated limb. From motor-cutaneous irritation arose dreams having to do with the production by the subject himself or by another of movements in which the constrained position of the foot played an integral part.

For example, those with bound feet dreamed of standing on their toes, of running, and of climbing stairs, or of seeing other persons carry out these movements, or felt themselves or saw some one else fixed in an unnatural position, *e.g.*, standing on their toes. With these results the experiences of the author and others as to dreams occurring spontaneously, presumably through natural motor-cutaneous influences, agree. Tension of the muscles from any cause, circulatory disturbances, rheumatic pains in the limbs, etc., combined with exhausted brain condition, the author thinks may have a great influence upon the production and character of dreams.

He next seeks to apply the results of his experiments to waking hallucinations, and to this end takes up and studies a number of cases (from the *Reports of the Society for Psychical Research* and from other sources).

He considers: (1) The abnormal skin perceptions of the insane (too well known to need discussion). (2) Abnormal motor perceptions apparently arising from muscle conditions. (3) Abnormal cutaneo-motor perceptions, which show no internal relation to the exciting condition. He lastly takes up visual hallucinations arising upon the ground of post-visual impressions.

To test the result of visual impressions upon dreams, he applied the following experiments: A number of persons were ordered after getting into bed, to gaze fixedly for several minutes upon a small object of some sort upon a ground generally of a complementary color, enclosed in a "wonder package." The eyes were then to be closed and not opened again before falling asleep. Whatever dream resulted was recorded in the same manner as in the former experiments. In nearly all cases in which the experiment was properly carried out and recorded, the resulting dream contained something related to the evening visual impression, though the object might be much altered in size, form, color or external relations. These latter observations the author does not consider yet complete enough to give more at length. He puts the following questions:

If it is not probable that by a study of visual hallucinations we may discover important psychical laws? If there is not in waking life a tendency under certain circumstances to reproduce passed perceptions in new form, a tendency which under normal conditions is inhibited, but which, when great fatigue or—more strongly—when degeneration has disturbed the brain equilibrium makes itself felt with great force? Is it not possible that by proceeding in this direction we may succeed in tracing visual hallucinations back to their concrete causes, and in the end may learn to combat them by direct counter impressions?

ALLEN.

EINE REISE IN DIE SCHWEIZ IM EPILEPTISCHEN DÄMMERZUSTANDE UND DIE TRANSITORISCHEN BEWUSSTSEINSTÖRUNGEN DER EPILEPTIKER VOR DEM STRAFRICHTES (Ambulatory Epilepsy). Burgl. (Münch. med. Wochenschrift, Sept. 11, 1900).

Burgl describes the following case of "poriomania," or "epileptic wander-impulse:" His patient, whom he was required to examine for his sanity, claimed that he had never had epileptic seizures. On the contrary, everything was in his favor as far as the amnesia was concerned. He had been married nine years and was an efficient mechanic. At the time the impulse to wander seized him, his wife, one child and his wife's mother were all ailing from various diseases, and it is hardly conceivable that he should have left his home if in his right mind, as he had always shown the highest devotion to his family. It was remembered that two weeks before his departure, he had complained of headache, insomnia, and lack of appetite. He had taken a few of his tools with him and wore his working clothes. Some days after his disappearance, a letter was received by his family from his parents, toward whom his journey had taken him. His father brought him back to his family. He had not been able to give a clear account of himself to his parents, could not tell them why he had come, etc. After his return he seemed somnolent for several days. He claimed after his return, that the illness of so many of his family had preyed upon him, and that later a homesick desire to visit his parents came over him, but that he dismissed the desire because of the expense. From that time his mind was not at ease, and his fellow

workmen had noted that his demeanor was not natural. He was uneasy and apprehensive. He remembered that on the day of his departure, he told his wife he was going to work, but he does not remember how he got to the depot. He dimly remembers being there and getting into the wrong train from which he was rescued by a friend who told him of his mistake. He had hardly any recollection of what took place on his journey.

Patient's family history is neuropathic. His mother was hysterical and suffered from hemicrania and fear of open places. A sister of his mother was insane and died in an asylum. His own sister was a somnambulist, and one of his children was an epileptic idiot. On his father's side there were also cases of neuropathy. All of his own brothers and sisters were subject to headache. He had scarlet and typhoid fever in early childhood. He had received a blow on the head as a child which left him slightly deaf.

From this family and personal history, and the similarity between the case and that recently related by Schultz, in the character of the wander-impulse, the author had no hesitancy in regarding his patient as psychically epileptic.

CLARK.

"BEITRAG ZUR KENTNISS DES HYSTERISCHEN DÄMMERZUSTANDES"
(Contribution to the Knowledge of Hysterical Delirium).

Raecke (Allg. Zeitschrift für Psychiatrie, 1901, lviii, 1, 5, 115).

The author calls attention to a form of hysterical mental disturbance most commonly observed among prisoners, described in 1897 by Ganser, and illustrates the subject by the histories of five cases. The condition is observed most frequently in persons with more or less mental defect, who have been imprisoned for some breach of the law more or less serious, and consists in a condition of confusion, and loss of orientation, sometimes with excitement, sometimes with depression, with rapid changes of mood, or again with stupid indifference to surroundings.

Hallucinations and illusions may be present but are not generally well marked, nor are delusions as a rule prominent. The confusion is as a rule especially evidenced in an inability to properly answer questions, to recall events, to count etc. Hysterical stigmata are often present and convulsive attacks may occur. The condition may last from a few days to several months. As exciting causes of the symptom-complex the author accuses the excitement of arrest, the fear of punishment, solitary confinement, the ordeal of questioning gone through with, and perhaps the hope of escaping sentence through being declared ill, all of which act upon a naturally receptive nervous system in a manner powerfully suggestive.

ALLEN.

THERAPY.

TREATMENT OF MORPHINE HABIT. J. H. McBride (N. Y. Medical Journal, Aug. 18, 1900).

The author believes that comparatively few people are permanently cured of the morphine habit. The moral character is usually so altered that even when the drug has been removed for some time, the will power is usually insufficient to resist the temptation to relieve the mental as well as physical suffering which is liable to recur. The withdrawal of the drug leaves a weakened hyperesthetic condition of the nervous system that involves the mind as well as

the body, and which raises the suffering to an intensity that is perhaps not excelled by that of any kind of sickness. When reducing the drug it is well to appreciate that small doses relieve the suffering nearly as much as large ones, so that in a rapid reduction method when large doses have previously been taken, considerable diminution can be made each day until a daily amount of one and a half or two grains is reached. The reduction should then be made much more gradual. An important principle to note is that the patient should be allowed to recover from each reduction before another is made. To relieve the general and intense feeling of uneasiness and pains in the limbs, the best remedy is frequent hot baths. The mixed bromides are very good but bromism should never be produced. Of the tonics, quinine, nux vomica and strychnine are the best. Rest in bed and daily massage are beneficial. When the patient has stopped the drug, and does not suffer without it, cure is still far from complete. It is necessary to give the patient a thoroughly normal environment which, acting unconsciously over a long period, without a hint of the end for which it works, will enable the person to change the morbid fashion of his thought and regain the habits of sanity. These people are men in rights and privileges, but they are children in impulse and unregulated lives. JELLIFFE.

ZUR OPIUM-BROM-CUR NACH FLECHSIG (Ziehen'sche Modification). (Ziehen's Modification of Flechsig's Treatment). E. Mayer and C. Wickel (Berl. klin. Wochenschr., Nov. 26, 1900).

By reason of the very contradictory results reported in regard to Flechsig's treatment for epilepsy, the authors, who represent the psychiatric clinic of Professor Siemerling of Tübingen, have recently made use of Ziehen's modification of the opium-bromide treatment. The method of Ziehen requires that all patients, irrespective of earlier treatment should begin with 0.05 gm. powdered opium three times daily. On the third day 0.01 gm. is given, on the fifth day 0.02 gm., and so on until the 51st day the patient should be taking the maximum dose of 0.9 gm. once a day (instead of three times a day). This one large dose marks the end of the opium treatment, and the patient is then placed abruptly on 6 gm. of mixed bromides. On the second day of the bromide period, or 53rd day, altogether 6 gms. are given again; on the 3rd and 4th day 7 gms. each; on the 5th and 6th, 8 gms. each, in three daily doses. The diet is simple and chlorhydric acid is given after meals. Apparently the daily dose is continued at 9 gms. without further increase. During the opium period the patient takes cool baths, at first of ten minutes duration, decreased slowly, the bath water also being made cooler each day for a week; this period of increase lasts 8 days, and the patient then begins anew. The initial baths are given at 24 R. and last 10 minutes, so that at the end of a week, the duration is three minutes and the temperature 17 R. This limit is maintained for another 8 days. Next is a period of 8 days with a temperature of 17 R. and 4 minutes; then others at 5 and 6 minutes respectively, until the bromide period is reached. The baths are now suspended for 8 days, and then begun at 24 R. and 10 minutes.

Other features of Ziehen's management are weighing the patient every third day, and the maintenance of ulvine action by abdominal massage and enemata. The present authors repeat a number of cases treated by this method. Some of their conclusions are as follows:

They find in the first place, as Ziehen did, that an unsatisfactory condition of nutrition is a contraindication, as a rapid loss of weight ensues. The large doses of bromide which are required by the treatment, may produce mental confusion, as happened in one of the authors' series. There was some tendency to disturbance of the digestive organs, although in but one did serious symptoms like anorexia and vomiting develop. Sensations of weariness and somnolence at the height of the opium period were regarded as inevitable. Despite tendencies of this sort, the patients had as a rule good appetites throughout, and looked extremely well, which with the disposition to take on flesh was attributed to the cold baths.

In regard to the effect of Ziehen's method on the epilepsy itself, the first part of the opium period did not show much improvement. In the latter portion of the bromide period there was distinct improvement, and during the bromide period complete cessation of the attacks. Not only the convulsions proper, but the psychical disturbances were benefited. It was common for the patients to say that they had never before felt as well. It is important to persist in the use of the bromide after the cessation of the attacks. The authors advise 8 gms. daily for at least a year, together with the diet and other measures under which the symptoms of epilepsy had been brought to a standstill. The authors indorse Ziehen's method, because it both diminishes the attacks and improves the patients' general health. [One asks what is the rationale of the opium-bromide treatment? The answer appears to be the strict diet, which is an integral part of Ziehen's management, is notably poor in salt, and thus suggests Toulouse's hypochlorisation. This fact in the light of Toulouse's researches, may explain some of the efficacy of the method.]

CLARKE.

CHLORETONE. A. A. Stevens (N. Y. Medical Journal, Feb. 23, 1901).

The author believes that chloretone is a valuable hypnotic in doses of ten to twenty grains. It acts within a half to an hour, and seldom causes any ill effect either upon the stomach, the heart or general condition. When used continuously it loses its power, and in insomnia due to pain it is valueless. In mental excitement it is of less value than hyoscine or paraldehyde, and is not successful when the fever is above 102° to 103° F.

JELLIFFE.

Notes and News.

PRELIMINARY PROGRAM

of papers to be read at the meeting of the American Neurological Association to be held in Boston, June 19, 20 and 21.

1. Chorea with Embolism of the Central Artery of the Retina, with short Review of the Embolic Theory of Chorea.
By Dr. H. M. Thomas, of Baltimore.
2. The Course, Prognosis, and Treatment of Hysteria.
By Dr. Theodore Diller, of Pittsburg.
3. A Case of Cerebral Hemiatrophy, with Hemiplegia and Aphasia, in an adult.
By Dr. W. L. Worcester, of Hathorne.
4. Report of a Case of Brain Tumor, Operation, Recovery.
By Dr. Wm. M. Leszynsky, of New York, and
Dr. James H. Glass, of Utica.
5. A Case of Cerebellar Tumor causing Pulsation, Thrill, and Murmur.
By Dr. Joseph Sailer, of Philadelphia.
6. A Method of Recording Foot-prints for the Study of the Gait.
By Dr. Joseph Sailer, of Philadelphia.
7. A Case of Dislocation forwards of the Seventh Cervical Vertebra.
By Dr. Frank R. Fry, of St. Louis.
8. A Case of Cervical and Bulbar Tabes with Necropsy.
By Dr. William G. Spiller, of Philadelphia, and
Dr. S. Solis Cohen, of Philadelphia.
9. A Case of Simple Serous Cyst of the the Cerebellum, with Autopsy.
By Dr. George W. Jacoby, of New York.
10. A Report of Two Cases of Hereditary Chorea.
By Dr. C. Eugene Riggs, of St. Paul.
11. The Early Management of Epilepsy.
By Dr. Smith Baker, of Utica.
12. Hereditary Cerebellar Ataxia, with Report of a Case.
By Dr. Hugh T. Patrick, of Chicago.
13. Two Cases Illustrating the Early Association of Mental Aberration with Syphilitic Infection.
By Dr. H. A. Tomlinson, of St. Peter.
14. The Stadia of Mental Disease.
By Dr. Theodore H. Kellogg, of New York.
15. Tumor of the Superior Worm of the Cerebellum, Associated with Corpora Quadrigeminal Symptoms.
By Dr. H. C. Gordinier, of Troy.

16. Tumors of the Corpus Callosum, with Report and Demonstration of Three Cases.
By Dr. James J. Putnam, of Boston, and
Dr. Edward R. Williams, of Boston.
17. General Paralysis and Symmetrical Gangrene, with Case.
By Dr. Henry R. Steadman, of Boston.
18. Traumatic Convulsions, Cranial Operation. An Interesting Pathological Condition, Recovery.
By Dr. Frank R. Fry, of St. Louis.
19. The Opium Habit. Some Notes on Treatment.
By Dr. Smith Ely Jelliffe, of New York.
20. Some Studies with the Ergograph.
By Dr. August Hoch, of Waverly.
21. A Case of Myeloma of the Spine with Compression of the Cord.
By Dr. John J. Thomas, of Boston.
22. Acute Multiple Neuritis.
By Dr. Charles W. Burr, of Philadelphia, and
Dr. D. J. McCarthy, of Philadelphia.
23. A Case of Pseudo-muscular Hypertrophy, with Autopsy.
By Dr. Graeme M. Hammond, of New York.
24. Gunshot Wound of the Spine. Operation. Autopsy.
By Dr. F. W. Langdon, of Cincinnati.
25. Dispensary Treatment of Mental Diseases.
By Dr. Walter Channing, of Brookline.
26. Two Cases of Brain Tumor with Unusual Symptoms.
By Dr. Wharton Sinkler, of Philadelphia.
27. Note on Chloretone in the Treatment of Epilepsy.
By Dr. Wharton Sinkler, of Philadelphia.
28. Astereognosis.
By Dr. Philip Zenner, of Cincinnati.

DR. CHARLES L. DANA was recently tendered a reception by the Philadelphia Medical Club.

DR. THEODOR KIRCHOFF, Private-docent of Psychiatry at Kiel, has been granted the title of professor.

THE REMARKABLE VIRCHOW COLLECTION, in the Pathological Institute at Berlin, was recently entirely destroyed by fire.

IN ROME an institute for the instruction of backward children of defective intelligence has been opened.

DR. CHARLES M. BURDICK has been appointed medical interne in the St. Lawrence State Hospital, at Buffalo, N. Y.

DR. PHILLIP H. S. VAUGHAN, Augusta, has been appointed assistant superintendent of the Eastern Maine Insane Hospital at Bangor.

DR. ETHAN A. NEVIN, of Ogdensburg, N. Y., has been appointed junior physician at the Long Island State Hospital.

A PATIENT at Sanford Hall, Flushing, L. I., recently committed suicide by hanging.

THE STATE HOSPITAL FOR THE INSANE at Augusta, Maine, which has accommodations for 500 inmates, now has 767 patients.

DR. DANIEL M. DILL, of Newark, has been appointed superintendent of the Essex County Hospital for the Insane, New Jersey.

THE NEW BUILDING at the State Hospital for the Insane at Harrisburg, Pa., has been opened. It accommodates 300 patients.

THE AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION will hold its annual meeting in Milwaukee, Wis., on June 11, 12, 13 and 14, 1901.

THE LANCASTER (PA.) COUNTY HOSPITAL FOR THE INSANE, which was opened March 13, cost \$72,000.

DR. ROBERT E. MILLER has been appointed attending neurologist to the Lansing, Mich., City Hospital.

DRS. WILLIAM C. KRAUSS, FLOYD S. CREGO AND HERMAN G. MATZINGER, have been appointed neurologists to the new German hospital recently opened in Buffalo.

THE CZAR OF RUSSIA, since his recent illness, has not had any of the epileptic seizures which formerly occurred every four or six weeks.

FOR THE TEMPORARY CARE OF PERSONS INSANE, or supposed to be, a detention hospital has been recommended by the Ramsey County Medical Society of Minnesota.

THE CENTRAL HOSPITAL FOR THE INSANE, Murfreesboro Pike, Nashville, Tenn., is much overcrowded, and has asked for an appropriation of \$20,000 for a new building.

THE ANNEX FOR COLORED PATIENTS, at the Louisiana State Insane Hospital, has been finished at a cost of \$18,000. Fifteen patients were received the day it was opened.

DR. E. H. STAFFORD, formerly first assistant at the Asylum for the Insane, Toronto, Canada, is one of the physicians who will accompany the Newfoundland sealing fleet this season.

IN MINNESOTA a bill has been introduced which makes it a misdemeanor for physicians or surgeons to administer medicines or perform operations when under the influence of liquor.

DR. MANCHESTER, for the past three years assistant superintendent of the Asylum for the Insane at New Westminster, B. C., has been appointed superintendent of that institution.

TO PREVENT PHYSICIANS AND SURGEONS FROM PRACTICING if they use intoxicating liquors as beverages, is the object of a bill introduced in the legislature of Arkansas.

THE HUNGARIAN GOVERNMENT has forbidden hypnotic practice except by medical men and under special permission. This is because of the great number of crimes attributed to hypnotic influence in that country.

THE PATHOLOGIST to the Hospital for the Insane, at Norris-

town, Pa., will be obliged hereafter to examine the cattle at that institution in order to prevent tuberculosis, as certificates given by drovers have proved unreliable.

THE DELAWARE LEGISLATURE recently passed a bill appropriating \$125,000 to the Delaware State Hospital for the Insane, at Farnhurst; also a bill increasing the appropriation for the State Pathological and Bacteriological Laboratory at Delaware College, Newark, to \$2,500.

IN PENNSYLVANIA a resolution has been introduced in the house of representatives providing that persons of aggravated intemperate habits be placed in an insane asylum until they are cured, and that they be recommitted in case of recurrence.

THE SALE OR PRESENTATION OF COCAINE, save on the prescription of a physician, is prohibited by a bill recently passed by the Tennessee Legislature. A penalty is provided for by a fine of from \$100 to \$500 upon conviction of violation.

THE SENATE has passed the bill of Senator Brackett providing that the vacancy in the Lunacy Commission now existing may be filled by Governor Odell from the ranks of physicians who are alienists or who have been in charge of the insane for two years.

THE AMERICAN NEUROLOGICAL ASSOCIATION will hold its twenty-seventh annual meeting in Boston on Wednesday, Thursday and Friday, June 19, 20, and 21, 1901. The meetings will be held at the Boston Medical Library. Members are requested to send the titles of their papers to be presented by May 20.

DR. G. T. APPLGATE, of New Brunswick, N. J., recently had a struggle for his life with an insane man whom he had been called in to see. The man, exhausted by lack of sleep and overwork, suddenly became insane, and when the physician was called in grabbed him by the throat. The doctor finally overpowered the man, and then collapsed.

DR. RICHARD K. VALENTINE, of Brooklyn, committed suicide on March 22, by severing a jugular vein. He was suffering from delirium tremens, and succeeded in overpowering the two women nurses who were trying to hold him, then got his pocket surgical case, took a knife and cut his throat. Dr. Valentine was fifty years of age and had practised in Brooklyn for years.

DR. CLARENCE B. FARRAR has been appointed clinical and laboratory assistant on the staff of the Sheppard and Enoch Pratt Hospital for Nervous and Mental Disease. Provision has been made for recent graduates of medicine, as resident assistant physicians, that they may make a special study of nervous diseases. An endeavor is to be made to admit only curable cases. The bequest of Enoch Pratt after litigation amounts to \$1,069,300.

AT A RECENT MEETING of the New York Academy of Medicine Alcohol and Alcoholism was discussed. Those present expressed themselves in favor of a law that will render it possible for a magistrate to commit a habitual drinker to an institution upon the advice of two commissioners of insanity, the person thus committed having to stay in the institution until it is decided that he is cured. Among others, Prof. M. Allen Starr and Dr. Alex. Lambert spoke in favor of such a law.

A BILL has recently been introduced in the legislature of this state providing that no person shall practice hypnotism, mesmerism, suggestive therapeutics, and allied phenomena after May 1, unless previously legally authorized, or unless authorized by the Regents. Candidates are required to show evidence of good general education and of having studied medicine in a medical school for at least two full school years. There is a penalty of not more than \$250 or imprisonment for six months for the first offence.

AMONG THE PRIZES OFFERED by the Académie Royale de Médecine de Belgique, open to foreigners, are one of 800 francs for the best work with new research to determine the relations between the neurons (closed, January 20, 1903), an anonymous prize of 8000 francs for the best work on pathogenesis and treatment of diseases of the nerve-centers, especially epilepsy—(this prize can be divided), and 30,000 francs will be added to this prize in case a cure for epilepsy is discovered, or some similar progress is reported.

TO RESTRICT THE MARRIAGE of persons afflicted with physical or mental disorders, is the object of the Chilton bill which recently was passed by the Senate of Minnesota. This bill is reasonably certain to become a law. Epileptics, imbeciles, feeble-minded or insane will not be permitted to marry in the state when the woman is under forty-five years of age. All applicants for a marriage license must show a certificate from a reputable physician as to their physical and mental condition, and as to their family history. Any sane person, not an epileptic, who marries an epileptic, imbecile, or insane person shall be punished by a fine of not more than \$1,000, or by not more than five years' imprisonment in the State prison, or by both. Any clergyman or official authorized by law to solemnize marriages, who shall marry any person who is prohibited from marrying by this act, shall be punished by a fine of \$1,000, or by imprisonment in the Penitentiary for not more than three years. This bill has the general approval in the state both of laymen and physicians. The increase of insanity in the state, due to the offspring of parents, one or both of whom were epileptic or imbecile, is the reason for the bill.

A HOSPITAL for the treatment of acute nervous and mental diseases in New York City, is the object of a bill recently introduced by Assemblyman Henry. The city is to appropriate \$250,000 for the maintenance of the hospital and the building is to cost \$300,000. There is to be a board of managers consisting of twelve members, of whom six must be practising physicians. These six physicians are also to form the consulting and attending staff of the hospital and to have the care and treatment of all patients. The superintendent is to be a physician of at least six years' experience and known as a specialist in nervous and mental diseases. His salary is not to exceed \$10,000, and he is to employ such attendants and nurses as he thinks necessary. The object of the hospital is to prevent patients suffering from mental diseases from being taken to Bellevue. All persons, residents of New York City, who are suffering from acute nervousness and mental disorders, are to be received by this hospital and detained there for a period not exceeding ten days. Magistrates may commit persons, who appear nervously or mentally disordered, to this hospital until their condition may be ascertained. This is to prevent them being railroaded to an insane asylum. The board of managers is to have power to dismiss patients committed to the institution. Cases of narcomania, alcoholism or habit neurosis may be committed to this hospital.

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Vol. 28



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TABLE OF CONTENTS ON PAGE II and iv

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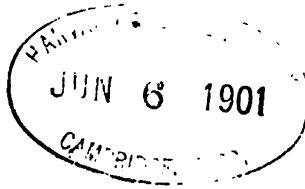
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OVER 106

CASES OF **DIABETES MELLITUS**
(IN THE PRACTICE OF 11 PHYSICIANS ALONE)
CURED BY ARSENAUR

DOSE MUST BE PUSHED TO POINT OF FULL
SATURATION IN EACH INDIVIDUAL PATIENT
AND CONTINUED FOR A PROTRACTED
PERIOD.

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THE
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Original Articles.

A CASE OF BULLET WOUND IN THE SPINAL CORD;
OPERATION THREE YEARS LATER.

BY JOSEPH SAILER, M.D.

The following case presents certain interesting features in regard to spinal localization, and the results of remote operation, and also curious sensory phenomena.

The patient, G. D., a man of thirty-one, an officer in the Cuban army during the late revolution against Spain, was wounded in battle, November 2, 1896; the bullet entered 1 cm. to the left of the right nipple, and passed out 2.5 cm. to the left of the spinous process of the 12th dorsal vertebra, having penetrated the lung, the liver, and the spinal cord; it was of small caliber, and the wounds of entrance and exit were healed in the course of a week. At no time were there any symptoms of suppuration, or of internal hemorrhage, and the only serious results are those due to the injury of the spinal cord. Immediately after the wound there was complete paraplegia, loss of sensibility in the lower half of the body, and intense pain in the back. For thirteen months the patient was carried about with the retreating army, either lashed to a horse, or in a litter. During this time there was atrophy of the lower limbs, extensive sloughing bedsores over all the bony protuberances, such as the sacrum, buttocks and ankles, and severe paroxysmal pains in the thighs and

lower portion of the abdomen. The patient acquired the morphine habit, taking the drug exclusively hypodermatically. He states that sensation began to return in the left side seven months after the injury. Fourteen months after the injury Dr. Valdez, of Mantanzas, examined the patient, and found the following conditions present:

Sensation was normal from the level of the 12th dorsal vertebra, with the exception of a narrow band of hyperesthesia on the left side, extending 2 or 3 cm. above the level mentioned. Sensation was normal throughout the left lower limb; it was completely abolished in the right leg to the level of the great trochanter of the femur; above this point there was an area of intense hyperesthesia which extended to the level of the 12th dorsal vertebra. There was complete abolition of rectal and vesical sensibility; the urine dribbled continuously; defecation was not felt. Occasionally there was slight retardation of tactile sensation on the external surface of the right thigh, and apparently there was in this region the syringomyelic phenomenon of dissociation. Motility was completely lost in the right lower limb, with the exception of an occasional involuntary contraction of the muscles of the anterior surface of the thigh, producing a slight movement of adduction. The reflexes were completely abolished. In the left leg voluntary motion was not totally lost; it was possible to flex the thigh on the abdomen, but the muscles of the lower leg were powerless. The knee-jerk was greatly exaggerated; there was foot clonus, and the mechanical irritability of the quadriceps was increased.

Dr. Valdez' report was submitted to Dr. Dercum, who expressed the opinion that there was a destructive lesion of the anterior cornu on the right side, extending backward and inward to the central gray matter, and involving especially the right pyramidal column. He thought there was probably irritation of the nerve roots of the third and fourth lumbar segments. He regarded the prognosis as unfavorable.

On the 3rd of May, 1898, the patient was admitted to the Presbyterian Hospital in Philadelphia; at this time his condition was as follows:

In the left leg motility was in part preserved; the limb could be flexed on the abdomen, adducted and abducted; all three movements were imperfect and feeble. The leg could be flexed, and extended on the thigh; both movements were weak and uncertain. There was no movement at the ankle joint, nor of the toes, but a slight tremor developed in the toe upon effort. The knee-jerk was greatly exaggerated.

ankle clonus and plantar reflex could not be obtained. In the right leg there was slight flexion of the thigh on the abdomen, evidently due to the contraction of the psoas and iliacus muscles; there was slight adduction, but abduction, rotation, and all other movements were impossible. The reflexes were totally abolished. An examination of the sensory changes gave the following results:

There was slight hyperesthesia over the right lower quadrant of the abdomen; there was total anesthesia in the right leg below a horizontal line at the level of the junction of the middle and upper thirds of the thigh, above this there was a zone of hyperesthesia about three inches broad. In the left leg sensation was normal above the level of the junction of the middle and lower thirds, below this point the anesthesia was total. The muscles were tested with the faradic current; in the right leg with the exception of an occasional sluggish contraction of the adductors when the current was strong, they failed to respond. In the left leg the muscles of the thigh responded normally to weak currents. There was no reaction of the muscles of the calf, or of those of the anterior tibial region. Posteriorly an analgesic area was found on the right thigh extending upward in an oblique line to the superior posterior spine of the ilium, then downward to the left, crossing the tip of the coccyx and extending a short distance along the posterior aspect of the left thigh. The general condition remained about the same until June, 1899, when the patient developed symptoms of a renal calculus, which was removed by Dr. Henry R. Wharton. The wound healed uneventfully. In November of the same year the patient began to suffer very severe fulgurant pains in the thighs and in the right lower quadrant of the abdomen; these failed to respond to any treatment that we employed, and as the patient was becoming every day weaker from loss of sleep, an operation was performed by Dr. Wharton. He removed the arches of the 10th, 11th and 12th dorsal, and of the first lumbar vertebræ, exposing about four inches of the lower portion of the spinal cord; the dura mater was found to be greatly thickened, and there were a few adhesions between it and the pia in the lower part of the wound. The dura was incised for a distance of about two inches, and the adhesions broken, and the wound then closed. Whilst the dura was opened the cord was carefully examined by inspection and palpation, but no change could be observed, neither was there any apparent deformity in the bones of the spinal canal. During the operation the spinal fluid exuded freely, and probably as much as a pint escaped, although it

was very difficult to estimate the quantity with any degree of accuracy. The wound healed absolutely without complication; but for two weeks after the operation the pains were severe and even apparently somewhat intensified, and there was marked hyperesthesia of the whole abdomen. Four weeks later the following notes were made:

The right leg: anteriorly, there was tactile anesthesia extending downward from a line passing horizontally across the thigh at the junction of the middle and lower thirds; below this point, however, pressure, particularly if associated with slight vibration, was always recognised, and often correctly localised, as far down as the knee; there was hyperesthesia from this line upward to the junction of the upper and middle thirds; movement remained as above, that is, there was flexion and extension of the hip, slight adduction of the thigh, but no motion at the knee or ankle, or in the foot; the reflexes were completely lost. The left leg: anteriorly, sensation to pressure and to pin-pricks was present above the ankle, there was hypalgesia on the posterior surface of the upper half of the thigh, in the foot strong pressure could be recognised, but not localised; there was considerable movement at the hip and knee, and slight voluntary movement of the foot and toes. The knee-jerk was present and somewhat exaggerated, although the weakened quadriceps was unable to move the leg. The other reflexes were lost; the cremasteric reflex was absent on both sides. Two weeks later in testing the areas of sensation it was discovered that allochiria existed. It was sharply localised; touch on the inner surface of the right thigh was referred to the corresponding surface on the other side, and the localisation was, curiously enough, far more accurate than when the left side was touched. The following day contact was perceived on both sides, and a day later, only on the right side. It is not certain how long this symptom had existed before its first discovery. At this time it was also observed that upon voluntary movement of the toes of the left foot, slight movement occurred in the toes of the right foot synchronously. The condition of the patient continued to improve; on one occasion there was retention of urine, and the evacuation of the bladder was followed by a brief attack of catheter fever; at another time he had a severe attack of influenza, the bacilli being found in the sputum. His strength increased until he could kneel on the bed supporting himself on a horizontal bar, and could move about the floor on his hands and knees. There was almost complete control of the bladder and rectum. The bedsores, which had been very severe, healed

completely, but subsequently two bedsores developed on the tuberosities of the ischii when he commenced to sit up. For a time he dispensed almost entirely with morphia, but soon relapsed. Under electricity, given occasionally, and systematic massage,¹ the condition of nutrition of his muscles improved considerably, and he was able to stand, supporting himself by a horizontal bar, and even to walk with the aid of crutches and an assistant on either side, when the knee joints were stiffened by posterior splints. It is altogether likely that ultimately he will be able to move about on braces. A final examination of the sensory and motor phenomena in June, gave the following results:

On the right side there was total anesthesia below a line passing obliquely across the thigh at the junction of the lower and middle thirds, extending upward in a broad band on the posterior surface, to a point about four inches below the gluteal fold; above this point to the level of Poupart's ligament, and to the gluteal fold posteriorly, there was distinct hypesthesia with loss of pain and temperature sensation; above this, there was a narrow band in which only pain and temperature sensation were lost, and above this, a narrower band in which only the pain sensation was absent. On the left leg anteriorly, there was total anesthesia of the foot from a line passing obliquely down the leg just above the malleoli; above this anteriorly, there was a small area of hypesthesia. Above the knee there was diminution of pain and temperature sensation on the whole anterior surface, the diminution not being equally pronounced for each sensation in all parts. Posteriorly, there was an area of diminished tactile sensation extending downward from the gluteal fold to the junction of the middle and lower thirds of the thigh; there was also an area of complete anesthesia covering the sacral and the perianal regions, and extending laterally as far as the posterior superior spines of the illia. Areas of pain and temperature anesthesia in the form of narrow bands, were situated just above this area; there was anesthesia of the right side of the scrotum; very marked hypesthesia of the left side; testicular sensation was absent, and it was observed that the passage of the catheter was almost entirely painless. The motility of the right leg was slightly better than before the operation. The flexion and extension at the thigh were vigorous; there was distinct adduction, and a perceptible contraction of the sartorius. Below the knee, except the slight synchronous contraction of the toes when

¹Both were provided through the liberality of Dr. S. W. Weir Mitchell.

those of the other foot were moved, already noted, there was no evidence of muscular activity. In the left leg there was flexion and extension at the hip, not quite as vigorous as on the other side. Adduction was strong. There was fair flexion and extension at the knee joint, not sufficiently strong to enable him to support the weight of his body upon the left leg without a posterior splint. The motion at the ankle was so slight that it was doubtful; there was no perceptible contraction of the soleus and gastrocnemius. The toes could be distinctly flexed and extended although the excursion was slight and the force feeble. The reflexes were totally lost in the right leg. In the left leg a feeble contraction of the quadriceps occasionally occurred upon striking the patellar tendon, but not always. The Achilles tendon reflex was absent, the plantar and cremasteric reflexes were absent on both sides.

The adductors and the sartorius on the right side responded to faradism and to galvanism, the reactions to the latter current occurring in the normal sequence. The quadriceps, the hamstring muscles, and the muscles below the knee did not react to either current.² In the left leg all the muscles reacted to both currents above the knee. Below the knee slight contractions could be obtained only by the use of very strong currents.

The following is a brief recapitulation of the principal features of this case:

About four years ago, a man was struck by a Mauser bullet which passed through his spinal cord in the lumbar and sacral regions; there was immediate total paraplegia, and some years later the appearance of severe fulgurant pains in the limbs. To relieve the latter, laminectomy was performed, and a greatly thickened dura was incised; the operation gave permanent relief. Subsequently, some improvement occurred, and finally there was only total anesthesia and paralysis of the right leg and lower portion of the right thigh, and total anesthesia of the left foot; movement at both hip joints and left knee joint, and slight movement of the left foot and toes; total anesthesia over the sacral area, and hypesthesia of the perineal region.

The sexual reflexes of the patient have been only partially impaired. After his arrival in the United States and the

²Unfortunately the measurements with the galvanic current have been lost. They showed quantitative diminution.

subsequent general improvement in his general condition, he had occasional erections, at times followed by seminal emissions; there were also voluptuous sensations. Since the operation the erections have been less frequent and the emissions have not occurred. It is somewhat difficult to bring these facts in accord with the location of the lesion that has been determined. According to Müller,³ who has made the most careful study of this condition, the center for erection is in the second sacral segment, and the center for ejaculation in the third. Wichmann accepts these statements. The third segment also receives sensation from the skin of the penis, scrotum and urethra. The testicular sensation is found at a higher level, in the second lumbar segment. But Müller calls attention to the fact that it is very difficult to determine the boundaries of these centers, and suggests that sometimes perhaps, these functions are governed by the sympathetic ganglia of the pelvis. Moreover probably less dependence can be placed upon the statements of patients in regard to these functions than in regard to any others, the natural tendency being to exaggerate. At any rate, it is difficult to explain the symptoms here described, unless we imagine a curiously limited lesion.

The interesting features of the case appear to be the localization of the injury in the spinal cord; the satisfactory results of the operation three years after the receipt of the injury, and the curious sensory phenomenon (allochiria) shortly after the operation while improvement was still in progress.

The localization of spinal disease has become so accurate, that it is possible to determine exactly what segments are involved, and even, to a certain extent, what part of each segment. It must not be forgotten, however, that, as a result of the over-lapping of sensory and motor functions, so that each cutaneous area is innervated from two or three contiguous spinal segments, each muscle from at least two, and often from four to five, and a certain amount of error is always possible. The labors of Starr, Kocher,⁴ Müller,⁵ and espec-

³Deutsche Zeitschrift f. Nervenheilkunde. Vol. xiv. p. 1, 1899.

⁴Mitteilungen aus den Grenzgebieten der Medizin und der Chirurgie, Vol. 1, p. 415. 1896.

⁵Deutsche Zeitschrift für Nervenheilkunde. -Vol. 14, p. 1, 1899.

ially of Wichman,⁶ have however, done much to eliminate the various sources of confusion. According to the latter, we can draw the following conclusions regarding the spinal cord in the case under consideration:

On the right side it seems certain that the anterior cornu, or the anterior root proceeding from it, is intact at the level of the first lumbar segment, because the psoas and iliacus are still capable of functioning, and they are innervated chiefly from this segment. There is probably a partial involvement of the second lumbar segment; the quadriceps is completely paralyzed, but there is slight power in the adductors; and after the operation there was voluntary contraction in the sartorius. Below this level the right side of the spinal cord seems to have been seriously involved; the quadriceps, hamstring, and calf muscles are completely paralyzed, and also all the muscles of the leg and foot, with the exception of the flexor communis digitorum, this, it will be remembered, contracted simultaneously with the same muscles in the other leg, but the contraction was entirely involuntary. As this muscle is chiefly innervated from the first sacral segment, it is to be presumed that, although the cerebral impulses to this segment were interrupted, the cells in the anterior cornu have nevertheless maintained their vitality. We can then conclude that the bullet entered about the level of the lower portion of the second lumbar segment, and ranged downward, involving the third and fourth, and possibly the fifth lumbar segments, but not the first sacral, or any of the segments below it on the right side. On the left side, the first, second, and third lumbar segments are certainly intact, on account of the persistence of the activity in the psoas, iliacus, the adductors, sartorius, quadriceps, and the rotators of the thigh. The fourth lumbar segment is partly involved because the quadriceps is weak, although as it is innervated also from the fifth segment, this could be accounted for by the destruction of the latter; however, the hamstrings and the extensors of the toes are also greatly weakened, and this could not be ascribed to involvement of the lower segment. The fifth segment is probably totally destroyed; there

⁶Die Rückenmarksnerven und ihre Segmentbezüge. Berlin, 1890.

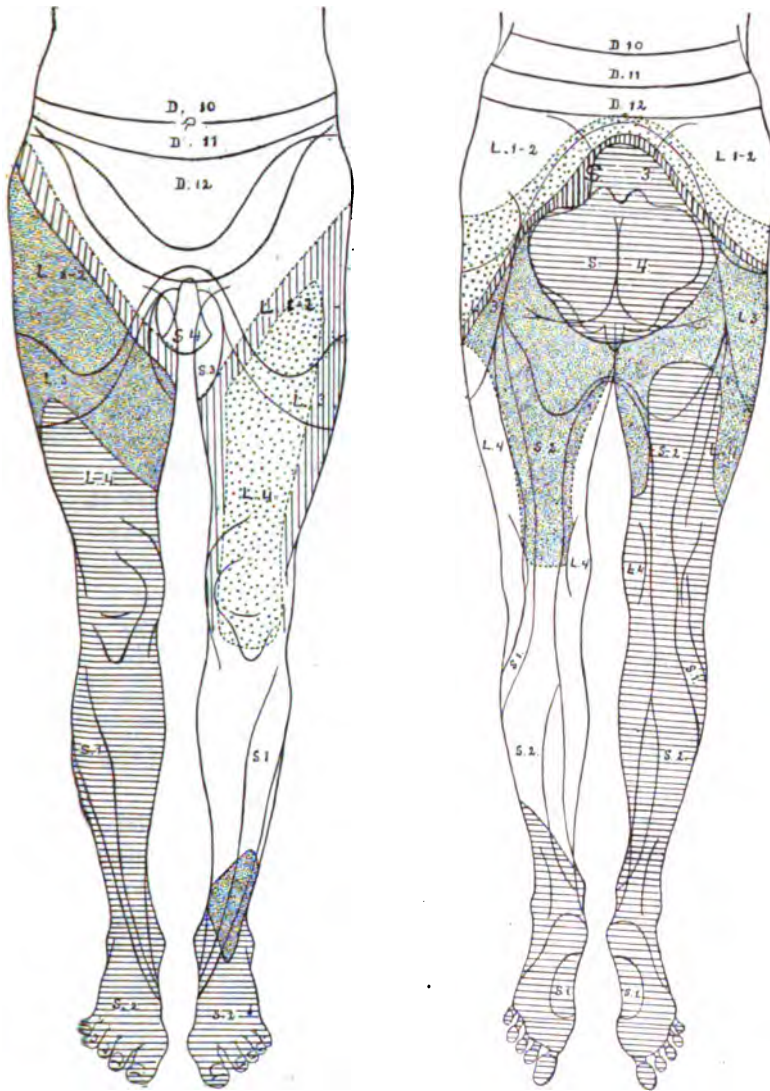
is complete paralysis of the peroneal muscles; almost complete paralysis of the calf muscles, and weakening of the glutei; there is also almost complete destruction of the first sacral segment, as is proven by the almost total paralysis of the toes and foot. It therefore seems likely that the bullet affected first the right portion of the cord, and then, ranging downward and to the left, involved a portion of the fourth, and almost the whole of the fifth lumbar and the first sacral segments.

The study of the areas of sensory disturbance gives the following results:

The first lumbar segment on the right side is practically intact; the areas supplied by it have at various times been hyperesthetic, but never markedly hypesthetic. There is at present a slight hypesthesia in the upper portion of the anterior surface of the right thigh, but this area is also supplied by the second lumbar segment, and it is perfectly justifiable to ascribe the defect to it. The second lumbar segment and also the third, are only partially involved; in the regions supplied by them there is a moderate hypesthesia, but not total anesthesia. The fact that the lower anterior portion of the thigh is involved, would not, according to Kocher, alter this opinion, because he refers this area to the fourth lumbar segment. Wichmann, however, refers it to the second and third lumbar segments. The fourth lumbar segment is completely destroyed, as there is total anesthesia of the inner half of the leg, and of the lower portion of the inner side of the thigh, and all the segments below this point appear to be equally involved; but the sensory distribution of the fifth lumbar segment is at present too uncertain to enable us to recognise its destruction by the symptoms produced. The first sacral segment is involved on account of the anesthesia of the outer anterior side of the leg; the second, on account of the anesthesia of the posterior portion of the thigh and the outer side of the leg, and the third, on account of the anesthesia over the sacrum, the scrotum and the testicles; and the fourth, on account of the anesthesia in the perineal region. It seems therefore certain that the posterior portion of the left side of the spinal cord is involved, from the level

of the lower portion of the third lumbar segment as far as the fourth sacral segment. On the left leg the areas of anesthesia are much less extensive; aside from the dissociation of sensation on the anterior surface of the thigh, there is no evidence of the involvement of any of the segments of the first sacral segment; the second sacral segment is unquestionably affected; there is an area of anesthesia on the posterior portion of the thigh, and the anterior surface of the foot is involved also. The third sacral segment is probably totally destroyed on account of the anesthesia of the sole of the foot, and of the sacral and scrotal regions; and the fourth sacral segment is also involved, so that the bullet probably involved the posterior portion of the right side of the cord from the second sacral segment downward; we would therefore expect to find the symptoms of total destruction of the cord, from the second sacral segment downward, as both sides are involved in both their motor and sensory regions, but as a matter of fact, all these symptoms are not present.

Wichmann gives for this segment the following signs: paralysis of the levator and sphincter ani, of the detrusor urinæ, the paresis of the external rotators of the thigh, of the glutei, of the biceps, the calf muscles, and of all the small muscles of the feet, and anesthesia of the sacral and gluteal regions, the coccygeal region and the posterior surface of the thigh. The symptoms are of course more extensive than this, as a result of the partial involvement of the upper segments; but the anesthesia is not quite so widely distributed, and the paralysis of the sphincter ani is very slight. To summarize these results it can be stated that the bullet entered about the level of the lower portion of the second lumbar segment on the right side, and ranged downward and to the left, passing out at the level of the second sacral segment on the left side; the changes extending beyond these limits may be ascribed to consecutive myelitis. Perhaps the preservation of the anal reflex can be explained by the supposition that the cells in the third and fourth sacral segments have maintained their vitality, and that the sensory changes referred to these segments are due to the interruption of the



Finely dotted areas: hypesthesia; transversely lined areas: anesthesia; vertically lined areas: thermoanesthesia; coarsely dotted areas: analgesia.

ascending tracts; for Higier places the center for this reflex in the third and fourth segments.

There was probably hemorrhage in the central portion of the cord, giving rise to the dissociation of sensation. Partly as a result of the absorption of this, and perhaps as a result of the absorption of inflammatory products, a certain amount of improvement has occurred, but how great this is can only be determined by a comparison with the previous examinations. It will be remembered that, when admitted, the movements of the right leg were restricted to a slight flexion of the thigh on the abdomen, and very slight adduction. Although no additional muscles, with the exception of the sartorius and the flexor longus digitorum, acquired the power of contracting, these movements all became noticeably stronger after the operation. In the left leg there were movements at the hip and knee joints, both of which became more vigorous and the patient developed considerable control over the movements of the toes. Sensation also improved, the upper portion of the right thigh, instead of being totally anesthetic, became hypesthetic, so that the patient could feel contact of moderate force, and localize it correctly. The zone of hyperesthesia in the right lower quadrant of the abdomen disappeared entirely. The most noticeable result of the operation was the complete abolition of the fulgurant pains.

Theoretical localization of the lesion in the spinal cord corresponded very closely to the localization that would be ascribed to it, on account of the situation of the external wound. According to Raymond,⁷ the fourth lumbar segment is on a level with the center of the body of the twelfth dorsal vertebra, and the second sacral segment on a level with the body of the first lumbar, and the spine of the twelfth dorsal. As the bullet emerged opposite this spine, and as the wound of entrance was to the right, and considerably above, corresponding to the level of the eighth dorsal vertebra, it can easily be understood how the wound in the spinal cord was produced; the fact that the segments are

⁷Nouvelle Iconographie de la Salpêtrière, 1895.

so close together in this region, the distance between the first lumbar and the second sacral, in several measurements that I made, being less than 2 cm., renders it easily conceivable how so many segments could be involved. There is no reason to believe that the spinal roots were directly involved, as the bullet entered anteriorly just to the right of the median line, and emerged posteriorly just to the left, and the roots, of course, are directed laterally; it has generally been admitted, moreover, that the syringomyelic type of dissociation of sensation is in favor of cord and against root lesions (Higier⁸). Although in this case we might explain this phenomenon by ascribing it to the pressure on the cord by the pachymeningitis, Van Gehuchten⁹ having particularly called attention to the fact that this phenomenon was characteristic of the early stages of pressure upon the cord. Of course this pachymeningitis was responsible for the fulgurant pains due to the pinching of the posterior roots. An interesting phenomenon that can not yet be explained, was the great increase in the severity of the symptoms for a short time after the operation. It is possibly due to the restoration of circulation in the compressed part, which apparently is always associated with more or less irritation, at least in the peripheral parts of the body, as after ligature. Schultz¹⁰ has observed this feature in two cases in which successful operations were performed for the removal of tumors compressing the spinal cord.

One of the most interesting symptoms developed in this case was the allochiria; this was discovered thirty-nine days after the operation and lasted about three days. The discovery was entirely accidental. While testing sensation upon the right thigh the patient suddenly announced that, when the inner side of this thigh was touched, sensation was perceptible only in the corresponding position on the left thigh. His surprise at this was considerable. As the right thigh was otherwise totally anesthetic, including loss of temperature

⁸Deutsche Zeitschr. f. Nervenheilk. Vol. ix. p. 194, 1896.

⁹La Presse Médical, 1897.

¹⁰Deutsche Zeitschrift für Nervenheilkunde. Vol. 16, p. 114, 1900.

and pain sensation, it was impossible to test the other forms of sensation. The localization was more accurate than the localization upon the left thigh in the same area, and there was no delay in perception. The area in which contact gave rise to this phenomenon extended from the junction of the middle and lower thirds of the thigh, to the perineal raphe, and was from two to three inches broad. The most interesting feature was the way in which the symptom disappeared. At first sensation was observed only on the left side, the next day it was observed on both sides but better on the left, and on the third day, on both sides, but better on the right; after this it was observed only on the right side. Attention was first called to this curious symptom as long ago as 1880, by Obersteiner,¹¹ He so named it because he had first observed it when testing sensation in the hands. He found the symptom in cases of tabes, and of transverse myelitis. Gowers also observed it in hysteria, and Gay¹² reports an interesting case in which the phenomenon was absolutely general, and occurred subsequent to an attack of diphtheritic paralysis. There were also certain symptoms that seemed to indicate that in this case hysteria existed as a complication, although Gay is very positive in excluding it. He suggests a theory to explain the occurrence of allochiria which depends upon the assumption that some of the fibers conducting tactile sensation decussate, while others do not, and that if the decussating set of fibers is destroyed the others convey the impulses to the hemisphere on the same side, and the sensation is referred to the opposite side of the body. He does not appear, however, to lay much stress upon this theory. Witmer¹³ has recently made a careful study of all recorded cases. He lays considerable emphasis upon the fact, to which Gay repeatedly called attention, that in these cases there is loss of muscular sensation, and upon the basis of this he suggests a theory which has, I think, considerable force: he believes that localization in any particular part of the body is largely dependent upon the ability to

¹¹Brain. Vol. 14.

¹²Brain. Vol 16. 1893.

¹³20th Century Practice of Medicine. Vol. 11, p. 905.

recognize motility in that part, and as it is well known that there is some bond of union between areas of the brain innervating symmetrical portions of the body, it follows, that if, in a case of this nature, loss of muscle sensation exists on one side and not on the other, contact on the former would give rise to a more distinct perception of the innervation of the muscles in the other side, and the sensation would therefore be referred to it. This theory, however, fails to explain one of Gay's cases in which the muscle sensation was lost in all four extremities. It has occurred to me therefore, that another explanation somewhat allied to this, might be more satisfactory. If we suppose that the relations that we know exist between motor areas innervating symmetrical portions of the body also exist between areas receiving sensation from symmetrical portions of the body, it might happen that a center long out of practice, as was the case in this instance, might not, when sensation gradually returned to it, perceive it as well as the center upon the opposite side; and therefore, when it was stimulated, and a certain amount of sympathetic stimulus occurred in the opposite center, it would be perceived very clearly on that side, and as a result the perception would be referred to the locality normally innervated by it, that is, directly opposite the locality stimulated. I find some support for this theory in the way in which the symptom disappeared in my case, because the succession of phenomena presented are similar to those that can be observed in the course of the education of a center to receive sensory impressions. It may be stated that the symptom has not reappeared in any portion of the body.¹⁴

¹⁴Determann (*Deutsche Zeitschrift für Nervenheilkunde*, Leipzig, 1900, p. 99), has recently resurrected and modified an old theory of Hammond's, according to which, if there is obstruction in one sensory tract, the impulse deviates to the other and involves the hemisphere on the same side, as a result the sensation is referred to the opposite side of the body. In some cases, in which there is only partial obstruction, sensory stimuli may pass up both tracts, and sensation is then perceived on both sides. If this were correct, *allochiria* would, presumably, be much more common than it actually is: for obstruction of one sensory tract is a not unusual lesion.

THE RATIONALE OF SUBJECTIVE HEALING.¹

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It is the claim of subjective healing always and everywhere, that owing to its acceptance and practice, there results a most radical and permanent improvement, or "healing," or cure of every sort of disease, both acute and chronic; and numerous are the instances that are quoted in substantiation of the claim. Careful critical observation leads rapidly to the conclusion however, that if in a given instance the disease happens to be an acute one, it easily falls within one of two classes: either it is naturally self-limiting, or, of ready cure by any means; or else, it has been wrongly diagnosticated. No intelligent person can suppose that a real fracture, or dislocation, can be healed by mental effort alone. Nevertheless, that many instances which have been diagnosticated as such, and so announced to the sufferer, have been thus "healed," is beyond question. Nor can one suppose that a real case of typhoid fever or of small pox or of pneumonia can be cured in like manner. Yet again, that many cases of these, as well as of almost every other acute ailment, or at any rate, of such as have had given some sort of technical name, are thus healed, there seems to be no lack of indubitable evidence.

Likewise, it does seem to be a fact, that many so-called chronic diseases are to be rightly included in the list of these "cures," temporarily, at least. Although, when Dr. John B. Huber tried to prove that such diseases as locomotor ataxia, softening of the brain, paresis, tumors, Bright's disease, cancer, etc., had been healed by "Christian Science," he succeeded in unearthing no case whatever that would have occasioned the medical man the slightest surprise. Yet, inasmuch as a careful study of these lists of cases reveals that they contain a very large proportion of long-standing functional troubles, such as neurasthenia, hysteria, asthenopia,

¹Generalized and rewritten from a paper read at the Twenty-sixth Annual Meeting of the American Neurological Association, May, 1900, entitled "Christian Pseudo-Science and Psychiatry."

diffused and shifting pains, joint aches and limitations, vicious digestion, faulty excretion, etc., it does not surprise one to learn that often temporary, and sometimes even permanent relief, is effected. Beginning as these so frequently do in some obvious accident, growth, or disease, itself perhaps fully recovered from, there has remained a sequela of distress, that has never been permanently removed. As a consequence, numerous vague or often poignant fears of becoming worse, or entirely incapacitated, or even of death itself, have grown rapidly with every twinge, and habits of both mind and body have developed conformable to this condition, which in turn serve but to perpetuate and intensify what may be called the secondary trouble. Added duly, also, have been certain unrecognized effects of the vicious maelstrom of circumstances which such people seem always bound to find, then to develop automatically, and finally to suffer from. Hence the purely physical disease that was in the beginning natural enough, has become, in time, transformed into other disease of a more or less truly psychical nature, but frequently not recognised as such. Moreover, the very best directed effort to get well has in time, given way to simply an everlasting puttering with a succession of futile remedies and practices; and the last end of it all has finally become worse than the first, even though practitioner after practitioner has been evoked to cure the rapidly deepening and multiplying symptoms; all of which may be charged to the account of mistaken diagnosis, either professional or lay; and, consequently, of unreliable prognosis and remedy.

People themselves cannot differentiate very well between, for instance, intercostal neuralgia and pleurisy; between the heart-commotion of neurasthenia and that of valvular disease; between the headache of brain tumor and that of constipation or eye-strain. And so on. For this they must at first, look to medical practitioners; and, as a rule, feel themselves bound to believe implicitly what is told them. Later on, they may come, and sometimes do come to distrust or but half accept what is told them, by no matter whom, and this, whether the diagnosis be correct or not. Again,

even when the diagnosis is correct, and thoroughly believed, the prognosis may be altogether more comprehensive and encouraging than possibility of relief of the obvious condition may justify. An instance of a woman with an uterine fibroid comes to mind. She was told very positively and clearly by her surgeon that removal of the fibroid would relieve her of her morbid apprehensions, her temporary exhaustions, aphasias, and paraphasias, and all her sense of fag and incompetency as well. The operation was a complete success. Nevertheless, she was not cured; and within a few weeks afterward, said she, "It makes one feel like taking the Christian Scientists at their word and trying them."

Finally, when it comes to the treatment itself, there is a disparity between promise and accomplishment often simply irreconcilable. Physicians all know how persistent certain people are in their endeavors to get positive statements, especially when such are as absolutely impossible as unnecessary. But they do not always remember the certainty with which sick people are apt to read into their most carefully uttered words their own conceits, hopes, and misgivings; and so, get unto themselves a summary of fact and fiction, which may be as mischievous as misleading. These people think, for the time being, but one thing, namely, that their own concerns are paramount to all else. With this, they give tone to all that is told them, and likewise to all that is not said. As a result they either expect miracles on the one hand, or else a long delight in whatever succession of new sensations the practitioner may be able to afford them on the other. Moreover, they do not forget that they are sick: that a cure has been promised: or that it seems long delayed. Quite a series of illustrative cases of asthenopia with accompanying ocular defect, who had been assured that refractive and muscular correction would bring permanent relief, and yet to whom relief did not come, even after repeated changes of lenses, and various operations and treatments, is in evidence. Here the ocular defect, the muscular unbalance, the adjustment of special treatment and lenses had all been skillful enough. But

the one thing—a comprehensive diagnosis of the whole person as well as the eyes, had been neglected. Numbers of other cases of what had been accurately enough diagnosed, say as astigmatism or hypermetropia, and have found no relief from refractive correction, have found it, at least to their own satisfaction, at the hands of some sort of subjective “healer.” And so with cases of dyspepsia, kidney disease, uterine troubles, etc., almost innumerable. And why? Simply because the real nature of the difficulty as affecting the whole patient, had been lost sight of in the intensity of the special interest, given quite exclusively to some particular part.

Now this makes it very desirable that he who would understand the *modus operandi* of the subjective healing influence must first have a very clear understanding of the people in whom such an influence may be operative, and also may be most thoroughly and permanently successful. When one undertakes to study carefully, the various people who have been healed in some one of these exceptional ways, and who eventually have become its most devoted adherents and faithful propagandists, one quickly gets the impression, generally speaking, that fate, no matter how generous, or knowing, or wise, has really not dealt very circumspectly with many of them, either first or last. For instance, they are often found to be so exquisitely organized to begin with, and have been so unwisely bred additionally, that it has been practically impossible for them ever to be satisfied with filling the usual places, accepting the common responsibilities, and attending to the ordinary duties of life. They have, in fact, been physiologically doomed to a station for which they do not find themselves fitted. And so, it comes to pass, that their very souls yearn, and most naturally, for the fascination, the excitement, and the sweet satisfaction of something other than they have—something usually, that is supposed to be secured only at some fountain just outside their daily opportunity. Again, one notes that rather frequently there has been given them a life really so hard and uncompensated, that necessarily discouragement has step by step resulted, and to such a depth, that in time it has thoroughly destroyed

all resiliency of either body or mind, and likewise all the energy needed for recuperative response to ordinary measures. If not this, then there has been an inordinate coddling—an unwise catering to a very dominant predilection for warm and cozy spots and gaudy egotistic display, by which the whole constitution has become cloyed and worn beyond any sort of capacity for more. Many times in addition to this, there has been bred from childhood on, not self-knowledge and self-reliance, but a most babyish dependence upon other people, which has in every sense been degenerative rather than otherwise. Nor should the fact of actual ignorance, or what is oftener worse, of a most fantastic half-knowledge of themselves and the common functions of their bodies, be overlooked as constituting one of the interesting surprises met with, while considering them and their claims.

Another morbid characteristic somewhat frequently noticeable, is dissatisfaction with religious foundations and beliefs. No longer do the ordinary rituals and expositions either enlighten or inspire. The pulpit seems inefficient and the pew unspiritual; and the old-time unction with which they have responded to sentiment or exhortation has been lost. Moreover, they have now come to the point where they realise that mere intellectual propositions, no matter how authoritative or venerable, do not satisfy the human heart; which, according to their light, must from the very nature of things be thus satisfied, before it can be permanently comfortable. Often, too, their former trust in Providence has been superseded by a more or less conscious distrust of what seems to them but the harsh overruling of caprice and incompetence. Even their emotional relationship to the historical Christ, no longer serves them when the hour of pain and darkness comes. To the much-reading, yet somewhat shallow-thinking, class, there has often crept in the inviting possibility, or a more or less clear assurance, of a something better to come from theosophy, clairvoyance, spiritualism, over-soul or other occult or extremely mystical source. In many of these people the innate love of novelty, and especially of anything charged with the dynamics of mysticism, is apt to have been a

marked inheritance, and likewise to have had just that education and unsettling experience, which has finally led to either starvation or else to shallow satiation of mind, in turn the basis of a hopeless outlook, which has but served to accentuate and develop everything else. Moreover, back of all this, we will often find that these people have more or less breathed the atmosphere of a somewhat muddled idealism, in which some portions of the modern world, in contradistinction to the sometime materialism of its philosophy, is supposably to find itself happy; and likewise that many of them have practically exhausted almost every resource of money, society, home and self, in an enforced, or voluntary attempt to find the bread of life in what are really to them but stones; and now, they would escape from the responsibility and demands of it all, and become a child again, in some place where holidays are ever the rule.

Another thing needs mentioning, namely, these people are much given to a sort of undue worship of the exceptional and exclusive, which in time gets to be an insatiate hankering for some sort of aristocracy for which neither birth nor social condition has as yet been competent; and owing to which there has finally resulted a kind of personal isolation that neither relatives nor friends know of, or could relieve, if they did. Indeed, in these people the herding and cult instincts, that which gives rise to an inordinate longing for extreme kinds of intimate fellowship, is often so strongly marked as to awaken nothing less than pity, in that nothing earth can afford seems adequate to satisfy. Often, as one would ordinarily suppose, there has been some kind of emotional failure, and all that this suggests; a condition of things which appertains not only to the married but the unmarried; to either sex as well; and to every age, sometimes from rather early childhood on. Added to this, is that which makes the one matter of conscious relief so important to so many, namely; the fact that all their reactions to life, both subjective and objective, have long since come to be most thoroughly negative and depressing. Nothing realized thus far, nothing worth while to look forward to, seems to be the

somewhat settled conviction of many of these people; so, what wonder that life in toto has got to mean almost exclusively but an hourly emerging from one nightmare of misery to become immediately involved in the horrors of another. By this, the normal rhythm of weariness and rest, and of pain and pleasure, has become so deeply aggravated, both in amplitude and rate, that the sufferer now expects momentarily to find himself simply engulfed in the trough of some deeper sea still, wherein he has no longer power to handle himself. At this point the so-called "emptiness of life," the permanence and depth and universality of suffering, and the seeming futility of ordinary therapeutics, appeal to him with a readiness and intensity that fixes attention, chills and stuns expectancy, and gathers energy often, in most destructive rather than in constructive directions; in that the resulting imperative conception is very apt to be rather unrelievable than otherwise. If now, these people are in revolt against what seems to them to be gross materialism; if they are ready to thrill with eager expectancy, when something seemingly more ideal presents itself; if they now turn from the rough handling of doctors and nurses to the gentle caressings of some sympathetic novelty, or the bewitching power of some thoroughly dogmatic mind; if they become luminous with the reflection of what is, to them, "soul-satisfaction;" if they see more in a religion of affiliation and expression than in that which seems to be but repression and prohibition; if they have become stolidly indifferent to almost everything which heretofore has seemed so important; if they respond to the "new" idealistic offering, instead of the regular prescription, with all the automatic readiness of the hypnoid state wherever found, let it not be thought that this is all silly, but really let the effort be made to understand how natural, how even necessary such a course is, psychologically speaking, when all the facts are carefully considered.

Advancing now to a study of these so-called cures still further and more accurately, and especially those which can be most rightly regarded as such, we quickly come upon the fact, that such happy events have been always effected in a

very natural way, and simply through the well-known laws of pleasurable expectancy, coupled with the power of cumulative suggestion, naturalized, by processes scientific enough, it is true; and yet not in the least according to the so-called "science" of the healers. For all this, judged by any modern standard of worth, is at best but a pseudo-science, and should be considered as such only. Indeed the philosophy of all these subjective healers, in which the supernatural mind finds a place, either chiefly or absolutely, seems abrogated not alone by their own frequent contradictions and quibbles, but by their practices, in that, by playing at will on the narrowed attention, the inhibited senses, the monoideism as well as the warmest, deepest interest possible to the natural mind, the "healer" really hypnotizes his subject into a most sympathetic yet natural rapport, and likewise into just as marked a post-hypnotic determination as well. Let us see how this is. After the seance, lasting usually for an hour or so, with attention riveted upon some particular attitude or movement; or upon a single idea, through the frequent reiteration of set phrases, with all the emphasis of big, initial letters, or the force of dogmatic curtness, there is surely enough induced a state, akin to that which is daily produced by hypnotists, by their revolving wheel, the crystal ball, or the "operator's pass," and it follows naturally enough, that a marked psychical impression additional to a more or less physical impression of varying, but always of marked importance, must and does result. Generally, in place of distracted attention, in place of vague apprehension, in place of auto-mimicry of inspirationless copies, which have heretofore dominated, there has been given a new marshalling of ideas and emotions in the direction of a new goal, which has itself likewise been made to glow so attractively, that the impetus of the hour now easily becomes the momentum of days. Both psychically and physically then, new copies have been set; new motives have been conceived; new relationships supposably established; and, whereas before, all had seemed against, and but for the one purpose of stifling and killing, now all seems to conspire to make life worth living again, and the means thereto of

easy access and use. In almost every ideational and emotional sense, the old has easily been made to give way to the new; and the current thus fountained and swelled, is not only a present fact, but is one which may flow on, at least until it either meets another set of natural limits, or else is attenuated and evaporated into nothingness. If, now, the healer could know enough to differentiate his advantage, and to follow it up with certain other measures indicated by the law which he has so successfully utilized, albeit so thoroughly despised meanwhile, he would indeed prove to be much more than now, the "blessing" which he so boldly aspires to be, and succeeds if at all in being, simply through just this very ignorance of what he ought to do, and have to do it with.

Whether in any given case the promised and expected healing will really take place and remain as a permanent "testimony" to the claims of the self-assuming healer, depends, of course, upon the person, his ailment, and the means brought to bear. That the claims made so frequently in effect, that there are no exceptions to be thought of, and no untoward sequela to be guarded against, are untenable, observation amply enough affirms. Woe indeed unto the sufferer who trustingly places his or her all in the hands of any sort of idealist, who has not likewise the knowledge and the comprehensive honesty requisite to give due attention to the actual condition of everything concerned. If the presumption of a materialistic practitioner, who sees nothing beyond his microscopic gaze, no finer than a microbe, is often incompetent for the actual need of any given sufferer, not less certainly may it be expected of the idealistic practitioner, no matter how high-powered or much lauded his "spiritual microscope," who even denies all value whatever either to the body as such, or to its own peculiar life. If in the presence and practice of the one, the patient gets to expect everything imaginable, or rabidly hungered for many crude doses, and gets fooled; so may he also, who relies never so implicitly upon the gracious effects of "a high attenuation of truth," or power of mind and nothing else. Moreover, he may actually attain to the topmost notch of self-elation and self-compla-

cence, and likewise assume, or even be able to rightly attribute this to his healer's skill; and yet have the cancer progressively eat away his very life, and the diseased heart cease its action upon his first serious shock. Nor does it avail, that untold functional troubles, and possibly certain organic ones likewise have sometimes more or less yielded their store of misery to the ideational demand. So sure as death itself, does the sufferer find eventually, that not what he thinks is so and even prays to have so, but what really is, must be reckoned with, and in due season. And this, too, even though the distress and the healing both be of mental order. One thing none of these people seem to know is, that no sort of lopsided, abnormal development, whether mental, moral, or bodily, can be depended upon certainly, or for long; or that upon all such developments there must naturally follow definite reactions, which may be quite as painful and even more dangerous than the original disease. The psychiatrist realizes that the beginnings of his most serious and hopeless cases are to be looked for in just such one-sided excesses of mind or body, or both, which in time result in changes of automatism, and eventually of structure, beyond restoration. Nor does it matter much what the motive for the excess may be. As Huxley said, "Outraged law knows no alleviating circumstance," and even a most humble service to the highest ideal possible, if excessive, and misplaced, may result in disease, quite as certainly as does any necessary service to man, if carried to a like extent. The only physiological and practical difference being, that whichever seems most interesting and joyous of itself, is the one less likely, other conditions being equal, to do harm.

A certain case, typical of others, proved to be a strong source of conviction of the truth of these delineations. A woman of twenty-five, of good but too refined parentage, well educated in the ordinary sense, fell down stairs when seventeen years old, and was so shocked, that her menstruation ceased for the time, as well as for sometime after, in consequence. After a year or so, dysmenorrhea gradually developed; likewise painful vision, and more or less dyspepsia. For these

several complaints she was treated in a variety of ways; but did not recover to any permanent extent. Then she went to a hospital, where she was "operated" (for what I cannot learn), somewhere in the pelvic region, and was promised ultimate relief from her troubles. But the relief did not come. Finally after about five years of suffering she fell in with "healers" of the Christian Scientist order, who faithfully tried their hand, and seemingly succeeded; for she soon resumed her work and remained at it for a year. Meanwhile, however, she slowly developed a typically characteristic condition; namely, a thorough-going dependence on her healers for sympathy and support; on their characteristic publications for mental pabulum; and on what she called "God," for about everything else. As for her own self-hood, it had become quite swallowed up in the assonant phrase, "God is all;" while a dark, thick, idealistic phlegm seemed to have invaded all her mental and bodily functions. Sensation had become hypersensation; perception illusional; ideation more or less imperative; attention narrowed down to an egoistic point, which the healing stimulus had only calloused; memory was very poor, save for the one set of ideas; will had succumbed to "the higher will" as she believed it; conduct was so erratic as to render her unfit for any vocation; while all the bodily functions were more or less irregular and distressing, with energy and endurance reduced to simply a useless quantity.

At this point she was the most despairing, hopeless, unpromising case it had been my fortune to see for some time. She seemed to have just life enough left to feel all the misery, and realize none of the relief incident to therapeutics, whether material or mental. "I have been through it all," she said. "For years the doctors had me and they failed; and now the healers can do nothing more for me; and worse, I cannot get away from them and their teachings and practices. Night and day my mind repeats their formulæ, and yet no good seems to come from it. I simply suffer as never before.

Evidently neurasthenic, evidently hysteric, and born and bred to be just this, evidently *blase* with therapeutic fag and disgust, evidently an obsessional slave of the worst type.

What a problem for insight, resource, patience and all the rest! And by all odds worse than this, was eventually to be found the deep despair into which she had been lowered, the listless will, the imperative conception that would brook no interference without mental pain of a worst order, and a deep feeling of poverty from which she had little hope of ever being able to rescue herself. In fact, fortune of body, of mind, of station, of purse had all oozed away steadily; and what was first acute and then became chronic, had now come to be as permanent, seemingly, as sin itself. Hers was a typical case of the morbidly subjective, post-remedial condition, both materialistic and idealistic, which needed both theoretical and practical elucidation, in every sense possible.

To this end let the following conclusions be entertained:

First, the final unsatisfaction of diagnosing, if never so accurately, the special affection alone, and not at the same time giving heed to the entire individual in whom it is found. The time has really seemed to come when we should go to the modern psychological and pathological laboratories and there learn that the human being is neither mind nor matter alone, but that in every feeling, thought and act there is a unified energizing, of which mind and body alike are necessary concomitants.

Second, the utter uselessness of wearing out people with multitudinous remedies, of no matter what order, that are aimed only at symptoms; and, likewise, the harm which may be done in thus cultivating uncalled for dependence upon just such supports. One need not be an extremist, or a skeptic, to see the absolutely scientific injustice of this.

Third, the danger of extreme concentration of a purely subjective order, and of the psychical elation which has not been given a corresponding solid basis to sustain it. It cannot be said that any such exclusive devotion to one aspect of life, is very generally developmental or safe, in the long run. What most of these people need is a clean, new set of mental images to be derived objectively rather than concentered from, no matter how intense, subjective application.

Fourth, the inadequacy of even a good initiation, when

subsequent developments are defective or counteracting. The "healer" often seems to make a good start and in the right direction, so far as the particular individual is concerned. But his lack of physiological and pathological culture, to say nothing of the theological and psychological atavism which possesses him, robs the patient of that further restoration and development of mind and body alike, which he so universally needs.

Fifth, unless the body has been remedied, the mind furnished and stayed, and the conduct ordered in accordance with actual needs comprehensively estimated, no cure worthy the name can be expected from either materialist or idealist.

Sixth, that neurologists and psychiatrists should proceed at once, to determine how far results, which are now secured haphazard and irresponsibly, can be gained by truly scientific inquiry and practice. This is needed, if for nothing more, than that medical education and practice may receive a proper impetus and backing in this much-needed direction.

Seventh, that people, especially when young, should be encouraged to most sedulously cultivate bodily endurance, mental growth and freedom, moral heroism, and spiritual self-reliance, faith in inductive science, rather than trust in dogmatic deduction; all in the hope, that where now there is such a readiness to develop morbid introspection and fears, imperative conceptions, and mental shiftlessness, there shall be achieved a commendable flexity and direction of mind, and the possibility of a joyous overcoming of ordinary obstacles.

AN ANOMALOUS CASE OF PARALYSIS AND DYSTROPHY
OF MUSCLES PROBABLY DEPENDENT UPON
BOTH NEURAL AND SPINAL LESIONS.
(NOT PRIMARY NEUROTIC
ATROPHY.)¹

By F. X. DERCUM, M.D.

A. W.; white; aged 26; native of England, was admitted October 11, 1898, to the medical wards of the Philadelphia Hospital, complaining of pain in left chest and stomach, of dizziness and of weakness in the legs. He is single. He has been a seaman for the past ten years.

Family history:—Father and mother both died of heart disease. One sister is living and well.

Personal history:—Had no diseases of childhood save measles. Has had at various times pneumonia, rheumatism and malaria. Had a compound fracture of the left thigh in 1890. Had a left-sided pleurisy with empyema in 1894. Chest was operated upon; scar is still present. Had another attack of pneumonia in 1897.

Admits chancroid and bubo, but denies syphilis. Has used alcohol and tobacco moderately.

About one year before admission he began to suffer from dizziness and occasionally fell from weakness in the legs. Weakness of the left arm also came on. At this time he lost some twelve pounds in weight. About seven months after the onset of symptoms he was obliged to go to bed and four or five weeks later developed tingling and shooting pains in the left leg. Some pain was at this time present also in the left arm. The muscular weakness gradually increased. About five weeks ago he coughed up blood and had pain in the left chest and also night sweats. Dizziness also persisted, and about one week ago he fell heavily, striking his head.

On admission the following condition was noted:—The general appearance is that of a young man, well developed and fairly well nourished. The eyes are congested and pupils react normally. The tongue is slightly coated. The pulse is full, regular and soft. The chest is seen to be well developed, smooth but seems to be a little sunken beneath the clavicles. A papular eruption is seen in the region of the sternum. In the region of the sixth rib, in the axillary line, is seen a cicatrix about three inches in length. The abdomen shows nothing on inspection. The heart presents nothing abnormal.

¹Read before the Philadelphia Neurological Society, Nov. 26, 1900.

Lungs:—Inspection shows slight impairment in respiratory movement in the left infraclavicular region. The percussion note is a little higher in pitch on the left side and expiration is prolonged on the left side; otherwise the lungs present nothing abnormal.

The abdomen is slightly tender in the epigastric and hypogastric regions; otherwise it is apparently normal.

The patient has loss of co-ordination of both upper and lower extremities. Cannot maintain his equilibrium with feet together and eyes shut. Cannot touch the nose with the finger tip when the eyes are closed.

10, 18, '98. Eye examination by Dr. Oliver:

Pupils equal. Irides freely movable to light, accommodation and convergence. Ataxic movements are present, marked in lateral excursion. Tremulousness of lids, more marked upon closure. Both eyeballs turn up and in when orbicularis acts, especially the right. Eye-grounds normal.

10, 30, '98. The patient has anesthesia of the legs below the knees; also tingling, numbness, pain in the legs. Tenderness is present over the nerve trunks of both legs from the hips down.

11, 15, '98. Patient cannot stand or walk. Has anesthesia of left hand. Has headache and constipation. Injections of bichloride gr. 1-10 daily have caused cellulitis of the back and have been discontinued.

12, 1, '98. Condition remains unchanged. Transferred to the nervous wards.

12, 5, '98. The patient is unable to bear his weight upon his legs, owing to weakness. All movements of the lower extremities are limited in extent and are performed with much effort and slowly. The thighs and legs can be slowly flexed, the former not quite to a right angle with the body, the latter to a little less than a right angle with the thigh. Abduction and rotation are limited. The extremities can with difficulty be raised from the bed; when extended, the maximum amount is such that the foot is about ten or twelve inches from the bed. The foot can be flexed and extended very slightly at the ankle.

There is no evidence of paralysis of facial muscles. There is no paralysis of the upper extremities; there is, however, great weakness. The right grip registers 28 on the dynamometer; the left 17. There is a "dead" sensation in the left forearm and hand.

The knee-jerks are much exaggerated, especially the left. Muscle jerks can be readily elicited and are plus. No ankle clonus is present. The plantar reflexes are present and exag-

grated. Biceps and triceps jerks are marked. If, at a point about midway of the extensor surface of the right forearm, a light blow be struck, clonus of the wrist and hand is elicited. The muscles of both the arms and legs are well developed; in fact unusually large.

There is no actual anesthesia or analgesia. There is, however, some hypesthesia in the left forearm and hand. No sensory disturbances exist elsewhere, except pin and needle sensations in the legs and feet and some pain and tenderness as follows: There is considerable tenderness in the lower limbs, especially about the knees and ankles and to a less extent about the hips. There is, however, special tenderness over the left sciatic nerve. There is little or no pain when the legs are at rest, but motion causes considerable distress. Tenderness is greatest in the left leg. There is no pain or tenderness in the arms.

The tongue protruded straight, is broad, tremulous, somewhat coated.

The pulse is regular, fairly strong. Pulmonary functions apparently normal. No heart lesions detected.

Abdomen prominent, slight tenderness in the epigastrium.

An ulcer, about one cm. in diameter, exists in the left lumbar region; it is deep and punched out in appearance, caused by hypodermic injection of corrosive sublimate; there are several areas of induration, accompanied by tenderness in the lumbar area. These were caused by injections.

12, 30, '98. The patient is able to sit in a wheel-chair throughout the day. Muscular power little if any improved.

Re-examined, 9, 30, '99. The patient states that he has sensations of constriction about the head and backache in lumbar region.

There is very slight intention tremor of hands. The dynamometer, with the right hand, registers 45; with the left hand, 43. The hands are livid and cold. Both feet are cold and wet with perspiration. The toes and feet are livid and marbled. The patient can move both legs only very slightly now, flexing them a little at the knees. He exerts almost no pressure in trying to extend the legs after the latter have been passively flexed. There is marked diminution of sensation in both legs. There is total loss on the outer aspect of the right leg and on the lower part of outer aspect of the left leg. Areas of hypesthesia are found on the outer aspect of both thighs. Areas of hypesthesia are also found on the outer aspects of both arms and forearms.

The sphincters are perfectly normal. The patient has perfect control over the bladder and rectum.

The knee-jerks are now much exaggerated, especially the right. There is a slight tendency to spasticity in both legs. A feeble disappearing ankle clonus is present on both sides.



Fig. I. Showing muscular development of legs, elevation of the upper borders of the scapulæ with formation of deep supraclavical fossæ, and also atrophy of both pectoral muscles.

Re-examined 10, 20, '00. The patient is still apparently well nourished. The muscles of the arms and legs are large—indeed, the thighs look as though hypertrophied. The patient claims, however, that his limbs are smaller than they were formerly. The color of the hands and feet is still dusky and somewhat marbled. The hands and feet are both cold.

The hands are moist, especially the fingers, and the feet are wet with sweat. The face is somewhat flushed, though not as livid as are the hands and feet. The nose appears slightly flattened and perhaps slightly deflected to right. There is, however, no decided depression of nose, such as is



Fig. II. Showing the flaring and elevation of both shoulder-blades due to atrophy of each serratus magnus muscle.

commonly found in specific disease of the bones and cartilages.

He is as before utterly unable to stand. The truncal muscles are also now exceedingly weak; he can bring himself into a sitting position only by the help of his hands. After leaning forward and being asked to bring the trunk into the erect position without aid of hands, he does so slowly and with difficulty. Asked to raise his arms, he is unable to bring left arm up higher than the shoulder; when the right arm is brought to the level of the shoulder, the movement upward

is interrupted by a sudden jerk after which the arm is brought into a vertical position. As the man sits in bed, supported by his arm, both scapulæ become winged. This flaring or winging of the scapulæ becomes especially noticeable when effort is made to raise the arms. It is greatly exaggerated on the left side. Here the scapula stands out almost perpendicularly from the trunk. The serratus magnus is much wasted. As the arms are raised, a deep fossa makes its appearance on either side above the clavicles in the inferior cervical triangles. It is much more marked upon the right side than upon the left.

The other movements of the arms are weak but preserved; in the right arm, flexion and extension, pronation and supination of the forearm are well performed. The movements of the wrist are normal. This is also true of the movements of the fingers and thumb. The dynamometer registers 46. In the left arm, flexion and extension, pronation and supination of the forearm are normal. This is likewise true of the movements of the wrist and fingers. The dynamometer registers 35. The tendons at the wrist now do not give any reaction.

Patient fails to touch his nose, chin or ear with tip of finger of either hand, the finger generally passing from one to three inches wide of the mark. The movement is performed a little better with eyes open than closed. There is no fumbling as is often seen in ataxia. The fingers simply sweep wide of mark.

The muscles of the chest are now noted as small. The pectorals especially upon right side are wasted. The normal axillary folds are absent, an angle being formed between the arms and the tissues next to the trunk. This is more evident on the right side than on the left. In the position occupied by the pectorals, the ribs can be felt with great distinctness, showing the muscles are decidedly atrophied.

The abdomen sags slightly. Asked to make the abdomen rigid, the patient simply balloons it by exerting the diaphragm. On being asked when flat on back to raise himself to sitting position, no contraction can be felt in recti or other abdominal muscles.

The small of back does not appear to be wasted but muscles are very weak. (The back is covered by quite a layer of fat which may conceal slight muscular atrophy.)

Is now unable to move the legs at all. Not only the thighs, but the calf muscles seem unusually large. They suggest by their appearance the enlargement so often seen in

myopathies. The muscles are everywhere soft and boggy to the feel.

The reflexes are still pronounced. The right knee-jerk is much exaggerated. The left knee-jerk is much exaggerated. A slight disappearing ankle clonus is elicited on the right side, but cannot be obtained on repetition of the test. No ankle clonus is present on the left side. The plantar reflexes are feeble. No Babinski sign. Cremasteric reflexes are active. Muscle-jerks can no longer be elicited. Biceps and triceps jerks are still present. No von Bechterew reflex can be obtained. The sensory changes are as noted in the former history. Pain is still present in the knees and ankles. The muscles everywhere are flaccid. Spasticity is nowhere present.

It is impossible to make an accurate diagnosis in the present case. The presence at times of the neuritic pains in various situations and the occasional tenderness over some of the nerve trunks suggest an affection of the peripheral nerves. It must be remembered, however, that these symptoms are not and have not at any time been a marked feature of the case. The clinical picture also is altogether anomalous when viewed from the standpoint of multiple neuritis. There is a complete paraplegia of the legs, no wrist-drop, no wasting of any of the muscles, and greatly exaggerated reflexes. The muscles of the arms, forearms, thighs and legs are so large as to suggest even the thought that they are hypertrophied. The thought indeed arises, have we here a muscular dystrophy, or atrophic change dependent upon a neutral degeneration? If so, the case must again be regarded as anomalous; it in no way resembles primary neurotic atrophy. The next suggestion that presents itself is that we have here a disease of the cord to deal with and from this it is difficult to escape. Indeed, it is not improbable that we have to deal with a lesion which involves both the spinal cord and the peripheral nerves. This seems to be the most plausible explanation of the case. Just what or where the lesion in the cord may be is a matter of conjecture. It is difficult to say what the lesions are that give rise to paralysis, flaccidity of the muscles, exaggerated tendon reactions and ataxia; wasting in truncal muscles

and no wasting in the limbs. Perhaps there are several lesions, or at least lesions which involve different columns of the cord at different levels. The idea of the concomitance of lesions in the spinal cord and peripheral nerves is favored by the findings in primary neurotic atrophy where we now know that changes are present in both these situations. Some cases also of primary neurotic atrophy, we should remember, are attended by increase of the knee-jerks (see, case reported by the writer, *JOURNAL OF NERVOUS AND MENTAL DISEASE*, June of 1900; case II.)

NOTES OF A REMARKABLE CASE OF INSOMNIA AND ITS TREATMENT.

BY JOHN E. BEEBE, M.D., CHICAGO, ILL.

A remarkable case of insomnia, in which I was compelled to subject various hypnotics to a series of crucial tests, came under my observation during the past year.

Mr. X., white, married, American, aged thirty-four years, had been placed in a sanitarium with the hope that he might moderate the excessive use of whiskey and cigarettes to which he was addicted. The hope was a vain one, for after the usual feeble effort he made no further attempt and passed promptly from a state of relatively good health into a furious attack of delirium tremens. When I saw him he had been for nearly two weeks under the care of the sanitarium staff, watched continually by two attendants, who were about worn out by their efforts to keep the patient reasonably quiet, he being in the fighting, wandering, bug-picking stage, so difficult to control, all efforts to induce sleep having failed. His condition was fast becoming serious, for signs of exhaustion were beginning to be manifest, and the outlook was gloomy, especially in view of the previous history, which while it eliminated any organic lesion, was a record of the daily and nightly use of from forty to eighty cigarettes every twenty-four hours since his eighteenth birthday. During the six weeks he was under my care a steady pitch-like flow of disagreeable odor oozed from his nicotine-stained hands. The young man, a son of luxury, had been drinking for at least half a dozen years, and had gotten his digestive apparatus into a pitiable state, and his emunctories were equally impaired. Calling into consultation Dr. H. T. Patrick, of Chicago, a diagnosis of profound nicotine poisoning, complicating delirium tremens, with a slow but steadily advancing "wet brain," and with the gravest of outlooks, was reached. The treatment was obvious: elimination, nutrition, stimulation when needful, perfect quiet and rest. All but the last of these factors could be managed after a fashion and with some degree of hopefulness, but to bestow perfect quiet and rest to the roaming, gibbering creature who was never by any lucky chance still for five minutes, was a hard problem to solve. Morphine pushed to the danger line *per os* and hypodermatically, was absolutely inert, except in its customary impairment of secretion, and so remained during the entire illness. The bromides were of like ineffectiveness, and chloral seemed only to add to the frenzy of the profoundly exhausted man. Trional,

which was the regular standby of the sanitarium had been used, but it had seemingly failed. I say seemingly, for the attendants did report that they had gotten a little relief with its help. In this emergency I therefore decided to give it a further trial. The usual doses of ten to thirty grains were continued, and were reinforced in every possible way by the aid of hot fomentations, hot packs, massage, high rectal flushings; in short, with any and every agency that in our anxiety we could think of. But all, as it looked then, to no purpose; one by one the patient's functions were suspended, and mania merged into a muttering condition, and thence into coma. For many hours the man lay hovering between life and death, and then began to improve slightly, but his mental condition was fully as bad as it had been, and his restlessness and delirium were even worse, if such a thing could be. Realising that the patient's elimination was fairly good and was improving, and feeling sure that trional was without cumulative effect, and that unless I could keep my patient quiet I would lose him, I ordered several ounces of trional. Beginning somewhat cautiously, I tried a varying series of experiments as to the dosage. Five to six grains every hour worked well on some days, on others not so satisfactorily. Fifteen grains every four hours up to ninety in the full day were used when necessary. The climax, however, came when in spite of anything I could do, my patient rolled about in the bed, over its end, under it, or across it for thirty-six hours, and exhaustion became apparent. Calling to my aid two strong men, I had the patient rolled in the hottest water packs his skin could endure, and had him firmly held in bed, and gave him during the following twenty-four hours one hundred and seventeen grains of trional, and he went to sleep for about twenty hours, as nearly as I can remember. I did not again have occasion during the several trying weeks that followed to administer such a heroic dose, but many times ran up to what would under ordinary circumstances, and with normal secretion and elimination be tremendous dosage. During the most of this time we were giving hypodermatically the strongest stimulants to keep a failing heart up to its work. The heart had not been functioning well for some time previous to the present illness, and at a surgical operation which the patient had submitted to, perhaps a year previous to the time of which I am writing, had caused much anxiety for half an hour to those in charge.

I can safely say then that I did not discover a single bad effect from the very large amounts of trional given during any single twenty-four hours, or from the aggregate quanti-

ty, in all several ounces, which was administered up to the beginning of convalescence. After a period of more than six weeks, during which time the drug was administered continuously, the patient made a complete and perfect recovery. No hint of any predilection for hypnotics was shown. During about three weeks the temperature ranged from 101° to 103° . About thirty pounds of weight were lost but promptly regained. A slight neuritis in the left leg prevailed for a few weeks, but vanished entirely.

My final conclusions based upon the above and a number of other cases are as follows: If attention is paid to elimination, if liquid foods are freely and regularly used, and if the heart is kept in the best possible condition, trional will save many a tormented brain from untimely destruction.

Periscope.

CLINICAL NEUROLOGY.

SUBACUTE COMBINED DEGENERATION OF THE SPINAL CORD. Risien Russell, F. E. Batten and James Collier (Brain, Vol. 23, 1900, p. 39).

The authors base this study on nine patients. The name is a provisional one only, and they denote by it a disease in which tracts of different function and development are affected at the same time. They believe that the affection has a distinct clinical entity and is probably dependent on a definite pathological affection. Lichtheim's cases of those changes associated with anemia were the first recorded and the relation of anemia to this type of affection, the authors claim, is at least threefold. (1) In some, anemia is a marked symptom; (2) cases of anemia in which symptoms of nerve disorder arise and changes are found in the cord after death; and (3) cases of severe anemia without clinical manifestations of nerve-lesions, but in which, nevertheless, definite morbid changes are found in the spinal cord after death. They give the following summary: (1) A stage of slight spastic paraplegia, with slight ataxia and marked subjective sensations in the lower limbs. (2) A stage of severe spastic paraplegia, with marked anesthesia of legs and trunk. (3) Stage of complete flaccid paraplegia; absent knee-jerks; absolute anesthesia; rapid wasting and loss of faradic excitability in the muscles of the paraplegic region; increase of superficial reflex excitability; absolute incontinence of both sphincters and edema of the lower extremities and trunk. They do not include anemia as a typical symptom, because it was absent throughout in some of the most typical cases; when anemia occurred, the changes in the blood were not those of pernicious anemia. The disease appears in the 4th and 5th decades of life, and the patients were without exception strong and healthy before the symptoms showed themselves. Syphilis was present in four, alcoholic excess in three, and prolonged suppuration in three other cases. The onset in most was slow and insidious, but in the most acute cases rapid, ushered in by headache, vomiting, pyrexia, and malaise. The clinical picture of the first stage is that of slight paraplegia. The first symptoms were subjective sensations of numbness, stiffness, and sometimes tingling in the lower extremities, followed either quickly or after some months by stiffness and clumsiness of the legs, and some dragging of the feet in walking. Objectively there is increase of deep reflexes in the legs, extensor response in the plantar reflex, and slight loss of sense of position in the legs. Similar symptoms and signs appear in the upper extremities, generally at a later date, and first noticed in writing. The cranial nerves and sphincters remain unaffected.

The second stage is ushered in abruptly by loss of power to stand or walk, and anesthesia in the legs and lower part of the trunk. In five cases this change occurred in a single night. The most characteristic sign of this stage is the rapid development of anesthesia, including loss of the sense of position, to which, and not to loss of motor power, the inability to stand or walk was due. Though motor power steadily declined, it was never completely lost until the final stage. The muscles were rigid, did not waste, and

gave normal electrical reactions. Tabetic athetosis was usually present in the hands. At first the anesthesia of the skin was peripheral in distribution, affecting first the hands and feet, but as it spread upwards it became segmental. Severe constant dragging pain below the costal margin on one side was present in every case, a girdle pain was common, and lightning pains frequent. The mental faculties were unaffected; the sphincters escaped, or were only slightly affected. The cranial nerves (3rd and 7th) were involved in some cases. The superficial and deep reflexes were increased, and jaw- and foot-clonus obtained. The lower lumbar and first sacral areas were always affected before the lower sacral and upper lumbar, and the lower cervical segments before the upper thoracic. There were no trophic changes. Irregular elevations of temperature occurred from time to time, irrespective of the presence of anemia. The length of this stage was less than one-sixth of whole illness, three weeks to six months, average five weeks.

The third stage comes on rapidly, accompanied, by a change in the general condition, shown by pyrexia, lasting several days, malaise, anorexia, drowsiness, and general asthenia, and the following succession of symptoms in the lower extremities: Absolute flaccid motor paralysis; absolute anesthesia; complete incontinence of the sphincters; loss of the deep reflexes; rapid wasting of the muscles, with loss of faradic excitability; and edema of the legs and trunk. In the lower limbs and trunk wasting was general, but in the upper limbs it appeared later, and affected in order the intrinsic muscles of the hands, ulnar flexors, radial flexors, extensor of wrist and of elbow, supinators, and 5th cervical group. The anesthesia became absolute and spread upwards, reaching as high as the 1st dorsal segment before death, in two cases to the 6th cervical segment. Pain disappeared with exception of the heavy pain beneath the costal margin. Signs of mental disturbance and deterioration appeared, with, in three cases, convulsions in the form of fine clonic spasms affecting the limbs. Severe bed-sores developed. The condition of the cranial nerves was unaltered. The duration of this stage was about six weeks, three weeks being the shortest period, and death was due either to sudden syncope or respiratory failure. The condition in this part of the illness was one "of mental and physical paralysis, profound anemia, general emaciation, and sepsis." The chief pathological changes were found in the spinal cord, and consisted of two distinct processes: (1) a focal destructive lesion and (2) a system lesion. In (1), in the affected areas swelling followed by fatty degeneration and absorption of the medullated nerve-sheaths, took place, the axis-cylinders being at first unaltered, then disappearing, a space being thus formed, simply surrounded by the connective tissue of the cord. In (2), the system degeneration, the long tracts exhibited a degeneration similar to that found after transverse lesions of the cord. The stress of the disease falls upon the mid-dorsal region of the cord, where there is very marked destruction of the white matter all around the periphery, involving both the endogenous and exogenous fibers: the posterior columns may here be almost completely sclerosed. On tracing the process up the cord the degenerated areas tended to be limited to the posterior columns and crossed pyramidal tracts, and extended to the upper portion of the medulla. Tracing it downwards, the diffuse degeneration is usually limited in the lumbar region to the crossed pyramidal tracts, with some patches in the posterior columns. In the sacral region degeneration is almost entirely limited to the pyramidal tracts. The authors strongly incline

to the view that a toxic agent is responsible for the changes in the spinal cord, and for the anemia which sometimes accompanies them, this toxin producing a parenchymatous degeneration by its action on the nerve elements of the cord. It should have been said that in the first stage of the disease severe intercostal pain was followed by herpes in two cases, and by hemorrhage corresponding to the distribution of a nerve-root in a third.

JELLIFFE.

MYASTHENIA GRAVIS. H. Campbell and E. Bramwell (Brain, Vol. 23, 1900, p. 277).

The authors point out that although about sixty cases have been described, it has attracted but little attention in England. The chief features are weakness, sometimes complete paralysis of the voluntary muscles; the loss of power after voluntary action, to be regained after rest, except in severe cases, is characteristic, and the "myasthenic reaction" (rapid exhaustion under faradic stimulation). Muscles which are in constant action are most apt to be affected. Because of the frequency of implication of the muscles innervated from the bulb, the disease has also been called "asthenic bulbar paralysis." Sensation is unaltered. Both sexes are about equally affected, but the disease comes on at an earlier age in women (average 24 years), than in men (average 35 years). Not unfrequently it has followed upon some acute affection, such as scarlet fever, influenza, typhoid fever, otitis media; occupation, syphilis, alcohol, neuropathic inheritance seem to play no special part in its causation. The mode of onset is usually gradual, and the muscles first affected are those innervated by the nuclei of the medulla, thus diplopia, ptosis, indistinct speech, weakness of lips, difficulty in mastication and in swallowing, and inability to hold the head upright, have occurred as the initial symptom, but in other cases the limbs have been affected earliest. In addition to the bulbar symptoms complete external ophthalmoplegia, irregular nystagmoid movements, readily induced fatigue of the ocular muscles, weakness of those about the mouth, difficulty of swallowing, weakness of the palate and of the tongue, feelings of fatigue, of aching and stiffness of the tongue, are common symptoms." The face is expressionless, immobile, with drooping upper eyelids, and the authors compare the facial expression to that of the Landouzy-Déjérine form of myopathy. Speech is characteristic. The patient speaks naturally when he begins, but soon speech becomes nasal; words become more and more indistinct; the voice becomes weaker and weaker, and finally he has to stop for want of breath. The muscles of the trunk and limbs are involved; from weakness of the neck-muscles there may be difficulty in supporting the head; from weakness of the back and abdominal muscles the patient may be unable to sit up long, or to raise himself into the sitting posture without using the hands. Great difficulty in turning in bed is present in some cases. Dyspnea on slight exertion is present when the respiratory muscles are affected. Attacks of breathlessness occur and are dangerous to life. If the attack comes when walking, the patient falls to the ground, is cyanosed and breathless. Strümpell, who first described these attacks, believes that they are due to sinking back of the tongue. In the limbs the muscles nearest the trunk are most affected—in the legs usually the ilio-psoas and quadriceps extensor; in two cases, however, weakness first appeared in the fingers. When the legs are very weak the gait is waddling, but in slight cases it may be natural, the patient merely having to rest for a minute or two from time to time. Sudden giving way of the legs is often present. When the pa-

tient writes, the writing is at first good and rapid, but it soon becomes slower and the letters badly formed, until the attempt has to be relinquished.

The muscles react in a peculiar way to the faradic current—they contract briskly at first to a tetanising current, but if the electrodes are kept in contact, very shortly the muscle ceases to respond; if the electrodes are applied again after a few minutes' rest the muscle again contracts, and again the contraction passes off. This is the myasthenic reaction. It is not present in all cases, it occurs only occasionally; it is met with in different muscles at different times in the same case, and in the same muscle there is great variability in the ease with which it can be produced. Muscular atrophy has been met with, but is exceptional. Fibrillary contraction was present in the tongue in two cases. The muscular sense, co-ordination, superficial reflexes are normal; sensory symptoms are absent, except for a sense of fatigue or stiffness in the affected muscles. The knee-jerks are generally more active than normal. Great variations occur in the intensity of the symptoms from time to time, and are characteristic of the disease. The most striking feature is the speedy production of muscular exhaustion. Emotional excitement, exposure to cold, the catamenial periods in women, increase the symptoms. In the majority of cases no visible lesion has been discovered after death. The pathology of the disease is obscure, but the authors suggest that it is due to the circulation in the blood of a toxin, probably of microbic origin, which acts selectively upon the lower motor neuron, so as to modify its functional activity.

As to prognosis, 23 out of 60 recorded cases died, the average duration of illness in the fatal cases being a year and a half; but some cases improve in a remarkable way, and have been known to remain free from symptoms for months, or even years, and it is probable that complete recovery sometimes occurs. Involvement of the respiratory muscles is a very grave symptom.

No specific treatment is known: an abundant and nutritious diet, and avoidance of cold and fatigue are important points; iron and arsenic are of use as tonics; strychnine has been tried, but it is unavailing.

JELLIFFE.

ACUTE ANTERIOR POLIOMYELITIS. E. D. Bondurant (Medical News, Vol. 77, Aug. 18, 1900, p. 245).

The author here presents a study of this affection as it occurs in Alabama, having sent out letters of inquiry to practitioners throughout the State. He had already reported an epidemic which occurred in 1896, and which affected 15 patients, some of whom were adults. Negroes were attacked equally with whites, and there were no contemporary cases of cerebro-spinal meningitis. In response to the circular letter, four practitioners reported some 15 or more cases. These examples, together with the epidemic already mentioned, and a few personal cases of the author, apparently constitute the bulk of the material recorded throughout the State. The symptoms and diagnosis, as based upon these cases, are in part as follows: Some cases begin without prodromes, while others have a short period of malaise, an initial chill, etc. The disease proper is characterized by a sudden, sharp rise of temperature, gastrointestinal disturbance, restlessness and in some cases convulsions. After a few days of this syndrome, the child is seen to have lost the use of its lower extremities. The bladder and bowel retain their functions. Some of the cases were, however, atypical. There were absolutely no symptoms

of general intoxication. In other instances, there were brain-complications, such as mental confusion, coma and general convulsions, which complex of symptoms closely simulated cerebrospinal meningitis until the appearance of the paralysis excluded the latter affection. Some adults who appeared to suffer from acute anterior poliomyelitis made complete recoveries; this termination discredited the diagnosis, which should doubtless have been malarial neuritis, a disease known to end in recovery, and one, moreover, which seldom attacks children. One child recovered, but suffered a relapse eighteen months later, which was followed by permanent paralysis.

JELLIFFE.

INFANTILE PARALYSIS. M. Little (British Med. Jour., Sept. 1, 1900).

Basing his statements on a large number of statistics the author says that girls are slightly more liable to the affection than boys (60:55), while the paralysis is more severe in boys. The left side is more often affected than the right (as 78:68). With the exception of two cases, said to be congenital, the age of incidence was six weeks to eleven years. Nearly one-third of the cases occurred in the second year, and in 78 cases before the end of the third year. In 41 cases there was gradual, ill-defined onset; in 43 paralysis came on suddenly; in 19 of these cases the child was healthy when put to bed, and was found paralyzed in the morning. Teething was very rarely suggested as a cause by the parents, convulsions occurred in 4 cases, pain in 1 case, and fever in 2 only. Injury seems surprisingly negative. Influenza, vaccination, diphtheria, and sitting on damp grass were given as the cause each in one case. In treating the cases, subcutaneous section of contracted tendons and fasciæ, correcting splints, exercise massage, and manipulations with subsequent retentive apparatus, were generally used. In only 12 feet was an open operation considered necessary, tenoplasty was performed 8 times, and arthrodesis 5 times.

JELLIFFE.

MUSCULO-SPIRAL PARALYSIS FROM FRACTURED HUMERUS. W. W. Keen (Medical Chronicle, Aug. 1900).

The author reports on six cases as follows:

Case I.—A child, aged six years, with T-shaped fracture into the elbow-joint with considerable deformity. At the operation, seven months afterwards, a fragment of the humerus was found drawing upon the nerve like a hook.

Case II. was an ununited fracture of the humerus with injury to the nerve and considerable laceration of the forearm. The operation was thirteen months after accident and improvement was partial.

Case III. was five months after the accident and recovery was rapid and complete. In order to be able to approximate the ends of the nerve in this case over an inch of the humerus was resected.

Case IV. was one in which the nerve was sutured thirteen years after the accident. There was a considerable gap between the ends of the nerve which was accordingly bridged over by strands of cat-gut, but no improvement resulted.

Case V. ended in slight improvement, the operation having been performed nearly two years after the injury.

Case VI. was one in which the musculo-spiral nerve had been divided by a knife-blade, and the operative result was good. In this and in the previous case the operation consisted of the removal of a

bulbous portion of the nerve at the site of injury, the continuity of the nerve not having been completely destroyed. JELLIFFE.

RECURRENT LUXATION OF THE ULNAR NERVE. F. J. Cotton (Boston Med. and Surg. Journ., Aug. 2, 1900).

The author reports three cases of this injury. The first case, the result of a fall, left a swollen elbow and a tender cord in front of the inner condyle when the elbow was flexed, to be reduced again on extension of the elbow. By pad and splints the nerve was kept in position and in four months the patient was well, except for occasional darting pains. The second case, in a girl, had a similar course and presented like symptoms. There was pain in the middle and ring fingers, not in the little finger. By massage and splints much improvement was effected, but luxation still occurred after the conservative treatment. In the third case, that of a boy, the luxation was only partial, but there were local pain and tenderness. Cotton divides luxation of the ulnar nerve into two classes (a) the habitual and (b) the traumatic. In the former class there is no known cause, and symptoms may or may not exist. In the latter case symptoms are the rule. The injury need not be direct habitual over-use of the elbow sufficing to cause luxation. The luxations are usually only temporary, produced by flexing the elbow. Permanent luxations are rare. The symptoms are tenderness, pain and numbness in the cutaneous distribution of the nerve, and some atrophy of the muscles supplied by it. Obviously there must be much tearing of the fibrous bridge over the nerve, and perhaps of part of the flexor corpi ulnaris muscle. With adequate rest and support the traumatic cases got well, conservative treatment giving good results. In other cases operation may be required after trying palliative measures. This consists in trimming the fibrous covering of the nerve and stitching the edge of the triceps to the internal condyle over the nerve. In other cases a slip of fascia has been dissected up from the flexor group of muscles and stitched over the nerve to the triceps muscle.

JELLIFFE.

FORMS OF TREMOR AND THEIR CLINICAL CHARACTERS. E. Williamson (Medical Chronicle, October, 1900).

The author gives an extended series of observations on different types of tremors. The most important things to note are:

(1) The parts affected; (2) whether the tremor persists when the limb is supported, and at rest; (3) whether the tremor is caused, increased, diminished, or arrested by voluntary movements; (4) the condition during the performance of certain delicate movements, such as bringing a glass of water to the mouth; (5) the rate and regularity of the movements; (6) the influence of mental emotions, of attention, and of the will; (7) whether the tremor affects the head; and (8) the presence of other nervous symptoms, the history of the case, indications or history of alcoholism, plumbism, or other forms of poisoning. In paralysis agitans the tremor is usually at first unilateral and afterwards bilateral, and in course of time the characteristic symptoms appear. The tremor is rhythmical, and the movements occur at the rate of five to seven per second. The movements are most marked in the fingers, thumb and wrist, and the small muscles of the hand, and the flexors and extensors of the fingers and wrist are those which are most affected. In many cases the movements are chiefly between the fingers and thumb. In other

cases the movements at the wrist, rapid flexion and extension, with a little supination and pronation, are most pronounced. The shoulder and upper arm muscles and the head and face are usually not affected. The tremor continues when the arm is supported, but is most marked during repose. During voluntary movements, which require attention, the tremor ceases or diminishes for a few seconds and then recommences. This cessation or diminution of tremor is of great use in diagnosis, since in disseminated sclerosis and many other forms of tremor the tremor is increased on voluntary movement. The tremor of paralysis agitans may be checked by the will for a few seconds, or by the patient holding on to the arm of a chair. It ceases while the patient reads an interesting book, during sleep, and is diminished when the patient is in open air. Mental excitement, worry, anxiety, sorrow, or joy, will increase the tremor, while freedom from worry and a quiet life will diminish it.

In disseminated sclerosis the tremor occurs only on voluntary movement. In mild cases it is only observed at the end of a voluntary movement; in severe cases it commences directly the action is begun, and increases as the movement continues. It occurs most frequently and is most marked in the arms, but the muscles of the head and neck and of the legs may be affected. This tremor prevents a woman from threading her needle. The handwriting is affected early in the disease, and in severe forms the pen is jerked so violently on the paper that only a few dashes are produced, and the pen runs a risk of being broken. In mild forms the patient can write, but the writing is jerky and the letters are irregular, this irregularity being seen best at the end of a word or sentence.

Mercurial tremor is rarely noticed. It occurs in workmen who suffer from chronic mercurial poisoning in various trades in which mercury is employed. It begins in the face and tongue, affecting next the arms, and afterwards the legs. At first the tremor only occurs during excitement, and resembles disseminated sclerosis by occurring only during voluntary movement. Slight tremor can, however, be noticed when the limb is at rest. The tremor is greatly increased by movement, and at a late period of the disease it becomes constant, as in paralysis agitans. Mercurial tremor is not associated with nystagmus and other symptoms of disseminated sclerosis, nor with the peculiarities of gait and attitude met with in paralysis agitans.

Alcoholic tremor is common, and is noticed both in acute and chronic alcoholism. It occurs not only in the hands, but in the lips, face and tongue, and sometimes in the legs. The tremor is best seen on voluntary movement. In mild forms it may cease when the limb is at rest, but in severe forms it continues, though it is much less than when voluntary movement takes place. The whole hand moves together with the forearm in the tremor; the movement is not localized to the fingers, nor to flexion and extension of the wrist, as in paralysis agitans. After the patient has performed some voluntary movement and the arm rests on some object, the tremor diminishes.

Tremor in lead-poisoning is rare. It is fine in nature, and resembles that of paralysis agitans, but it is increased by movement. Other signs of lead-poisoning allow a diagnosis to be made.

In hysterical tremor almost all forms of tremor can be simulated. A fine tremor has been described which is especially seen in voluntary movements, and a coarse form in which there are rhythmical movements of the hand or head when there is no voluntary effort.

Tremor in hysteria is not constant, and presents variations in intensity from time to time. When the tremor occurs only on voluntary movement, the absence of nystagmus or optic atrophy will show that it is hysterical in character.

Senile Tremor.—In old age, tremor which bears some resemblance to that of paralysis agitans is often observed, but the attitude of the body, rigidity of the limbs, and position of the limbs which characterize this latter disease are absent. In the early stage senile tremor is noted only on movement, and ceases at rest. In advanced cases tremor occurs when the limbs are at rest, but is increased by movement. Both arms are affected, and the tremor commences at about the same time in each. Senile tremor is fine, and there is no great incoördination of voluntary movements. On examining the hand, it will be seen that it moves together with the forearm, and there is no pill-rolling movement nor flexion and extension of the wrist, which occur together or alone in paralysis agitans.

Asthenic tremor is sometimes noticed in the general weakness which follows many acute diseases. It is a fine tremor, and is increased by voluntary movement. If the hand is firmly supported the tremor ceases, but if insufficiently supported, so that some muscular effort is necessary to maintain the posture, the tremor does not entirely cease. When the hands are held out in front, or when an object is taken hold of, the tremor is marked. The hand and forearm move together in the tremor, and there is no flexion and extension of the wrist as in paralysis agitans. Nystagmus, scanning speech, and the other symptoms of disseminated paralysis, and the attitude and other symptoms of paralysis agitans, are entirely absent. The author says he has seen this tremor associated with phthisis.

Tremor in Graves' disease is frequently present. The movements are usually fine, constant, and rapid. The tremor is most marked in the hands and arms, but in severe cases other parts of the body are affected. It is best seen when the hands are stretched out in front of the body. It is not dependent on voluntary movements. It is present in repose if the muscles are not thrown out of action. Excitement or nervousness increases it, and it is greatly increased if a delicate movement is attempted, such as writing. The tremor affects the hands as a whole, and the hand and forearm move together in the tremor.

Tremor in general paralysis of the insane is a frequent symptom, and affects chiefly the lips and tongue. In order to see it the patient should be made to speak, show his teeth, and protrude the tongue. The tremor of the arms is inconstant and the movements unequal. It occurs especially in voluntary movements, but continues also during repose. Words are incomplete, syllables are omitted and letters are not attached to one another.

Tremor associated with gross lesions of the brain occurs occasionally in hemiplegia, in which a fine tremor develops, observed only in the arm, and seen mostly during movement. In tumors of the crus and pons, a coarse, jerky incoördination, resembling that which is seen in disseminated sclerosis, is noticed. In lesions of the corpora quadrigemina tremor is present in the arms on voluntary movement, like disseminated sclerosis.

Hereditary tremor may affect various voluntary muscles, and occasionally all the muscles, but is most frequently observed in the legs, the trunk, neck, lower jaw, and tongue. In some cases it is an irregular, coarse intention tremor; in others it is a fine, rhythmical,

oscillating tremor, which can be checked by making a voluntary movement.

Simple or essential tremor includes a group of cases for which no cause can be discovered. Tremor is the only symptom; it persists for years, and there is no other complaint. The tremor may be fine or coarse; it is increased by movement and mental emotion; during repose usually it ceases, but occasionally it continues. The hands are chiefly affected.

Tremor in myokymia is so rare that it need be only slightly described. It is a condition in which there is persistent and diffused quivering of the muscles.

JELLIFFE.

UEBER KOPFMAASSE DER IDIOTEN (Cranial Measurements of Idiots).

Kellner (Allg. Zeitschrift für Psychiatrie, 1901, lviii, 1, s. 61).

The author measured the heads of 220 idiots, 122 males and 98 females, in the following dimensions: (1) Riegers horizontal (the circumference on a line passing through the superciliary ridges and occipital protuberance). (2) The upper horizontal (circumference on a line parallel to Riegers but 2 cm. higher). (3) Greatest height above Riegers line. (4) Length of the arc across the vertex from the root of the nose to the lower border of the occipital protuberance, and this subdivided into (a) the frontal arc, from the root of the nose to anterior end of the sagittal suture; (b) the parietal arc, from the anterior end to the posterior end of the sagittal suture; and (c) the occipital arc, from the posterior end of the sagittal suture to the external occipital protuberance. (5) The arc measured over the vertex between the fossæ lying just anterior to the external auditory canals and over the roots of the zygomatic arc. (6) The greatest length of the skull. (7) The greatest breadth of the skull.

In healthy persons the following figures are said to represent the physiological variations in measurements: (1) Riegers horizontal, 52.5 to 57.5 cm. (2) Superior horizontal (not given). (3) Height above Riegers line, 10.8 cm. (average). (4) Arc across the vertex, 31 to 36.3 cm. (a) frontal arc, 11.8 to 15.6; (b) parietal arc, 10.9 to 15.2; (c) occipital arc, not given. (5) Zygomatic arc, 30.8 to 35.8 cm. (6) Greatest length, 17.5 to 20 cm. (7) Greatest breadth, 14.5 to 16.5 cm.

Among the idiots measured a deviation beyond these limits was found in a proportion varying from 13% of alterations of the greatest width of the skull to 41% of variations of the height of the skull above Riegers line, in the great majority of cases this last measurement being shorter than normal. Leaving out the cases of hydrocephaly and of excessive microcephaly there seemed to be a decided tendency to diminished height of the skull, and flattening of the frontal arc, accompanied in some cases by shortenings of the zygomatic arc and in a less number by shortening of the parietal arc, these factors all working to diminish the capacity of the cranial cavity. Individuals presenting reduced height of the skull and shortened parietal arc, seemed to have a special tendency to epilepsy. The author arranges his cases which presented most marked variations in tables, and discusses them somewhat at length, which discussion cannot be followed further here.

ALLEN.

Book Reviews.

DISEASES OF THE NERVOUS SYSTEM. A Text-Book for Students and Practitioners of Medicine. By H. Oppenheim, M.D., Professor at the University of Berlin. Authorized Translation by Edward E. Mayer, A.M., M.D., Pittsburg, Pa. First American from the Second Revised and Enlarged German Edition. With two hundred and ninety-three illustrations. Philadelphia and London. J. B. Lippincott Company, 1900.

While this work has been available for several years to those who read German, Dr. Mayer has done a service to those of the profession who do not include a knowledge of German among their accomplishments, in presenting such a good translation. The book is a standard on diseases of the nervous system, such as one would expect from the pen of such a man as Prof. Oppenheim. It is very clearly and concisely written, and yet is complete and comprehensive. Special stress has been laid upon the symptomatology and treatment. The work is based upon the personal knowledge and experience of the author, although he makes use of the writings of other eminent investigators and teachers.

The volume is divided into a general part, treating of methods of examination and general symptomatology, and a special part, consisting of all except 90 pages of the book, in which the diseases of the nervous system are considered. The special part is subdivided into six sections as follows: diseases of the spinal cord, diseases of the peripheral nerves, diseases of the brain, the neuroses, diseases of the sympathetic nervous system, and toxic conditions with predominating nervous symptoms. The book is profusely and well illustrated by two hundred and ninety-three cuts and photographs, most of which are new. This volume will prove useful and interesting to general practitioners as well as to neurologists. BONAR.

THE CARE OF THE CHILD IN HEALTH. By Nathan Oppenheim, A.B. (Harv.), M.D. (Coll. P. & S., N. Y.), Attending Physician to the Children's Department of Mt. Sinai Hospital Dispensary, Author of "The Development of the Child," and "The Medical Diseases of Childhood." New York. The MacMillan Company, London; MacMillan and Co., Ltd., 1900. All rights reserved.

This little book of 300 pages is written in a very entertaining style so that when once begun it is difficult to lay it aside. The author has studied the child and his needs, and gives a great deal of wholesome and important advice on every subject pertaining to the child in health. He devotes one chapter to the pregnant woman and speaks of many things which a woman pregnant for the first time, and many others also, should know. He considers the clothing which a pregnant woman should wear, and also the question of maternal impressions. The baby's outfit and its preparation, and the best kind of a room for the nursery with a description of its furnishings and necessities receive detailed attention. With the exception of a chapter on defective children and one on the common diseases of children, the rest of the book is given up to the feeding, bathing, sleep, exercise, clothing, habits and education of the child, and the relation of parents to children.

Oppenheim begins when the child is born and discusses all its wants and the way to anticipate and provide for them as he grows

up. The writer gives reasons for everything and goes into minute details such as are usually obtained by a young mother only from her mother or woman friends, and which are then more than likely not the best.

The book is one which every young woman about to become a mother, and especially young parents, should read. It will answer many an unconscious query in the mind of a mother, as well as give that information which she knows she needs and is anxious to obtain without showing her ignorance to her friends. The book is well gotten up, and is one which many a physician will be glad to recommend to his patients.

BONAR.

BOOKS RECEIVED.

"Consumption, Pneumonia and Allied Diseases of the Lungs." By Thomas J. Mays, M.D. New York: E. B. Treat & Co.

"Progressive Medicine." Volume I, March, 1901. Philadelphia: Lea Bros. & Co.

"A Practical Treatise on Nervous Exhaustion." By Geo. M. Beard and A. D. Rockwell, M.D. New York: E. B. Treat & Co.

"Transactions of the Iowa State Medical Society." Volume xviii, 1900.

"Report of the Commissioner of Education for year 1898 and 1899." Volume 2.

"Saint Bartholomew's Hospital Reports." Volume xxxvi.

"Traite de therapeutiques des maladies mentales et nerveuses hygiene et prophylaxie par." By Paul Garnier & Paul Cololian. Paris: J. B. Bailliere et Fils.

"Studio Clinico Sulla Così Detta Demenza Precoce." By Dr. Lorenzo Mandalari. Napoli: A Tocco.

"Trattato di Psichiatria." By Prof. Leonardo Bianchi. Napoli.

"Epilepsie—traitment, assistance et medicine legale." By Prof. Paul Kovalevsky Vigot Freres. Paris.

"La tuberculose et la medication Creosotee." By Dr. Samuel Bernheim. Paris: A Maloine.

"The Circulation of the Nervous System." By Herman Gasser, M.D. Platteville, Wis.

"Food and Principles of Dietetics." By Robert Hutchinson, M.D., Edinburgh. New York: Wm. Wood & Co.

"Des paralysies pseudo-bulbaires." By Dr. Albert Comte. Paris: G. Steinheil.

"The International Medical Annual, 1901." New York: E. B. Treat & Co.

"System of Physiologic Therapeutics." By Dr. S. Solis Cohen.

"Electrotherapy." Vol. I. By Dr. Geo. W. Jacoby. Philadelphia: P. Blakeston's Son & Co.

"Second Annual Report of the State Board of Insanity of Massachusetts." 1900.

"Proceedings of the American Medico-Psychological Association." Vol. VII, 1900.

Notes and News.

PRELIMINARY PROGRAM

of papers to be read at the meeting of the American Neurological Association to be held in Boston, June 19, 20 and 21.

(Continued.)

29. A Medico-legal Case.
By Dr. James Hendrie Lloyd, of Philadelphia.
30. (a) A Case of Policephalomyelitis.
(b) The Central Nervous System in a Case of Cancer of the Breast.
(c) Poliomyelitis of the Adult.
By Dr. Edward Wyllis Taylor, of Boston.
31. A Case of Organic Hemianesthesia of Over Seven Years' Duration, with Autopsy.
By Dr. F. X. Dercum, and
Dr. Wm. G. Spiller, of Philadelphia.
32. A Clinical Classification of Insanity.
By Dr. F. X. Dercum, of Philadelphia.
33. Intra-Cerebral Osteoplaque with Report of a Case and Exhibition of Specimen.
By Dr. Samuel Ayres, of Pittsburg.
34. Toxic Dosage in the Treatment of Many Nervous Disorders.
By Dr. Wm. C. Krauss, of Buffalo.
35. A Case of Peripheral Pseudo-Tabs with Exaggerated Reflexes, with Autopsy and Microscopical Examination.
By Dr. Chas. K. Mills, of Philadelphia.
36. Presentation of Cases of Muscular Dystrophy and a Case of Congenital Bilateral Facial Paralysis.
By Dr. Phillip Coomes Knapp, of Boston.
37. The Pathology of Huntingdon's Chorea.
By Dr. J. McCarthy, of Philadelphia; and
Dr. Sidney I. Schawb, of St. Louis.
38. Spinal Cord Compression. Clinical and Anatomical Theories.
By Dr. Joseph Fraenkel, and
Dr. Joseph Collins, of New York.
39. The Prognosis of Traumatic Hysteria; based upon the after histories of a number of litigated cases.
By Dr. Pearce Bailey, of New York.

THE ILLINOIS EPILEPTIC HOME, Chicago, has received a gift of \$500 from Theodore Oehne.

THE STATE LEGISLATURE of Indiana has rejected the bill to establish a state epileptic colony.

MISS CORA DAMROW has been appointed matron of the State Hospital for the Insane at Lincoln, Neb.

THE STATE HOSPITAL for the Insane at Yankton, South Dakota, has asked for \$45,000 to complete its buildings.

THE FRENCH MINISTER OF WAR has ordered lectures to be given at army posts on the dangers of drunkenness.

THE INDIANA LEGISLATURE has been asked for \$80,000 for a state hospital for the insane to be located at Salem.

DR. FREDERICK PETERSON has been appointed Clinical Lecturer in Psychiatry in the College of Physicians and Surgeons, Columbia University.

DR. JOHN FOSTER, of Georgetown, Texas, has been appointed third assistant physician at the State Lunatic Asylum, at Austin.

THE COLLEGE OF PHYSICIANS AND SURGEONS, Baltimore, has appointed Drs. W. B. T. Smith and J. A. Campbell assistant physicians at Bayview Asylum.

DRS. C. H. LEWIS AND E. D. WEEMS have been appointed assistant resident physicians at Bayview Asylum, from the University of Maryland.

DR. JAMES THIRD, professor of medicine at Queen's University, Canada, had an attack of apoplexy recently and is not expected to recover.

DR. W. E. YOUNG, recently in charge of the Randall's Island hospitals, has been appointed superintendent of the insane pavilion at Bellevue Hospital.

IMPROVEMENTS at the Mount Hope Hospital Asylum, Nova Scotia, during the past year, have caused an increase of \$3,900 in the expenditures on public charities.

DR. FREDERICK PETERSON has been appointed president of the State Lunacy Commission, by Gov. Odell. He takes the place of Dr. Wise recently removed by Gov. Roosevelt.

THE BIBLIOGRAPHY OF AMERICAN NEUROLOGY AND PSYCHIATRY on page xx in this *Journal*, is the only index published of the literature on these subjects by *American* writers. Eminent neurologists and alienists are saving it and find it useful.

DR. HANCKER, superintendent of the Delaware State Hospital for the Insane, reports that the institution contained 329 inmates at the beginning of the year.

THE SUM of \$180,000 is asked for repairs and new buildings for the State School for the Feeble-Minded at Faribault, Minn.

THE NEW BUILDING for male patients at the State Home for the Feeble-Minded and Epileptics, at Lapeer, Mich., has been completed.

THE BEVERLY FARM HOME and School for Feeble-Minded in Illinois has recently been enlarged by the addition of eleven rooms, also a large school room.

DR. W. C. LAIDLAW, who has been connected with the Ontario, Canada, Asylum service for five years, has gone to Europe to take special courses in the hospitals there.

DURING THE PAST YEAR, 323 patients were admitted to the State Hospital for the Insane at Morris Plains, N. J. There were 236 discharged. The hospital contains 1,389 patients.

DR. GEORGE F. EDENHARTER, superintendent of the Central Hospital for the Insane, Indianapolis, Ind., has been re-elected by the trustees of the hospital for a third term of four years.

DR. FLORENCE H. WATSON, formerly of the hospital at Norristown, Pa., has been elected assistant superintendent of the State Hospital for the Insane at Farnhurst, Pa., vice Dr. John H. Hammond, resigned.

DR. T. J. W. BURGESS, superintendent of the Protestant Hospital for the Insane, Quebec, is going to recuperate his health in Europe during the three months' leave of absence which has just been granted him.

THE FORTY-SEVENTH ANNUAL REPORT of the Taunton, Mass., Insane Hospital, just issued, shows that 1,249 patients were treated during the past year. There were 389 admissions and 382 patients were discharged, 105 as cured.

THE ILLINOIS WESTERN HOSPITAL for the Insane, at Watertown, has asked the legislature for \$12,500 for a society hall, \$5,500 for a male dormitory, \$2,500 for a laundry building, \$2,500 for a refrigerating plant, and \$6,000 for a parole ward.

THE SECRETARY of the State Board of Charities, of Pennsylvania, gives the following as the weekly cost of maintaining each pa-patient in the various hospitals for the insane in that state: Harrisburg, \$3.75; Danville, \$3.73; Norristown, \$3.29; Warren, \$3.50; Dixmont, \$3.85; Wernersville, \$2.96.

THE SUPERINTENDENT of the schools of Baltimore has called the attention of the school board to the necessity of making provision for the instruction of epileptics who are barred from the school. He suggests that a school room be set part for such children.

DR. IRVING C. ROSSE, of Washington, D. C., died recently of hydatid obstruction. He was a specialist in mental diseases, author of several medical books, and was a witness in the Guiteau and other famous trials.

THE NATIONAL COUNCIL OF WOMEN is asking the state department of the Ontario, Canada, government, to appoint a woman physician to the post of assistant medical superintendent, when a staff is selected for the new Coburg asylum for female patients.

THE HOMEOPATHS of Pennsylvania are making a strong plea for an insane asylum to be under the control of members of their school as there is not an asylum in Pennsylvania where a homeopathic doctor is admitted to practice. They ask for \$200,000 with which to erect a building.

DR. F. W. ROBERTSON, formerly in charge of the insane pavilion at Bellevue Hospital, and for the last few months resident physician and acting superintendent of the Elmira Reformatory, has been appointed permanent general superintendent of that institution.

THE SENATE COMMITTEE on public health has reported a substitute for the bill of Senator McCabe to regulate the practice and teaching of hypnotism, mesmerism, suggestive therapeutics, and other kindred sciences. The substitute relates only to hypnotism and mesmerism, and provides that any person who practices such and is not a duly licensed physician or graduate from some educational

institution for the teaching of such sciences duly licensed by the regents of the state, shall be deemed guilty of a misdemeanor.

THE INCORPORATION of the Inebriates' Home of New York City is the object of a bill recently introduced. This Home is to have the power to receive and retain inebriates, under rules provided by the State Board of Charities, for periods varying from six months to a year. The city is to provide for the maintenance of the home, and those who are unable to pay will be treated free. Drs. William T. Jenkins, A. Campbell White, and I. N. Love are said to be among the trustees.

THE LOCATION OF THE STATE COLONY FOR EPILEPTICS, in Illinois, has not been yet decided upon. Three members of the Board of Charities favor the location at Elsau, Jersey County, while two members prefer Grand de Tour in Ogle County. The latter place is considered by physicians and specialists to be more healthful and better adapted for such a colony, and to be more advantageously situated in the state. It is only one hundred miles from Chicago, while Elsau is 270 miles from Chicago, and 230 miles from the center of the population of the state.

THE MEDICAL FACULTY of the University of Pennsylvania and others have appeared before Councils, of Philadelphia, for the purpose of urging the speedy removal of the almshouse and insane departments of the Philadelphia Hospital (Blockley) to a more suitable location. As it is now arranged, the insane department and the almshouse militates against the institution as a source of great benefit to the thousands of medical students who annually come to Philadelphia. It is now believed that both these departments will be removed to a place near the house of correction, at Holmesburg Junction. The sum of \$200,000 has been made available for the erection of these new buildings through the action of Councils.

THE ATAXIA CLUB is the name suggested, by a writer to the *N. Y. Herald*, for a club which he proposes to found, whose members shall all be sufferers from locomotor ataxia. The writer has had the disease for eighteen years and has had twenty-four doctors treat him, but it was only during the last six years that his condition has been recognized as locomotor ataxia. His idea is to form the club of those only who are afflicted with locomotor ataxia, secure a physician to give his whole attention to the members of the club, and procure a cottage by the sea where those members who wished might live and have all their comforts looked after. The writer also thinks that by thus combining the sufferers might discover some specific for the disease.

THE STATE CHARITIES AID ASSOCIATION, in its report to the State Commission in Lunacy, calls attention to the rapidity with which insanity is increasing in this state and urges in strong terms the need of taking some steps to check its spread. The report states that mental disease is increasing faster in proportion than the population and that in the various hospitals for the insane there are now 2,000 more patients than can be properly accommodated. It is estimated that, in addition to the buildings now being erected, provision must be made for 2,100 additional patients, the average rate of increase being 700 per year. In this report the abolition of the pavilion for the insane at Bellevue Hospital is advocated on the ground that the early treatment and classification of insane patients there is unscientific and antiquated. There are now 22,000 dependent insane persons in this state. In order to insure the proper treatment and classification of the insane the Association proposes the establishment of a reception hospital in this city, and to place this hospital in charge of the Manhattan State Hospital, thus eliminating the Bellevue insane pavilion.

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TABLE OF CONTENTS ON PAGE ii and iv

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Original Articles.

PRESIDENT'S ADDRESS.¹

By G. L. WALTON, M.D.

Gentlemen:

In opening the twenty-seventh session of the Association, I wish first to express my deep sense of the honor conferred in election to this office. I shall not detain you by a lengthy address, for many scientific communications claim your attention. I have the pleasant duty to extend a hearty welcome on behalf of my colleagues in this city. We have not forgotten the pleasure derived from your sojourn among us six years ago; far less have we forgotten the visits, both pleasant and profitable, we have made to other cities here represented, and we sincerely hope that this meeting may draw still closer the bonds which have gradually united us, so that we now meet, not simply as associates, but as friends.

We have lost by death three members since our last meeting, Dr. Gray, Dr. Rosse and Dr. Worcester.

Dr. Gray was one of our early members, and to his zeal and devotion is largely due our rapid increase of membership and elevation of standard. We not only miss to-day the stim-

¹Read before the American Neurological Association, June, 1901.

ulus of his scientific enthusiasm, but we miss also the genial personality which endeared him to us as individuals.

Dr. Rosse reflected credit on the Association by his contributions to medical literature, and rendered special service, as did Dr. Gray, in representing us at the triennial meetings of the Congress of American Physicians and Surgeons.

Dr. Worcester, a more recent member of the Association, was a conscientious student and tireless worker in his chosen field.

The progress of neurological science has been continuous during the past year. If we can point to no lofty pinnacle of special achievement it is because industrious endeavor and untiring research have raised the whole level of the science to which our work is dedicated.

A few words may be in place regarding the present status of the neurologist as a consultant and as a special practitioner of medicine. Others have dwelt upon the rapid advance in recent years in the anatomy, physiology, and pathology of the nervous system, and the high standard in these studies now required even of the general medical student. But this is not the only direction in which a change has come about in our department. The function of the neurologist as a consultant has been gradually extended during the same period. In earlier times his waiting room served chiefly as a receptacle for the nervous invalid, the mentally incapacitated, and the sufferer from incurable disease of the central nervous system. His income was eked out by general practice, and, in his early days, by giving electricity and applying the cautery. At present he is summoned quite as often by the surgeon as by the physician, to advise, for example, in case of fractured spine or skull, and in the constantly increasing operations on the nervous system, both central and peripheral. His aid is sought not only in cases recognized as falling into his peculiar province, but by general practitioner, surgeon, and specialist alike he is called to assist in the solution of problems of varied nature, particularly in the analysis of

disturbances of motion, sensation and nutrition often involving other than purely nervous structures.

The alienist knows that Bright's disease may produce delirium without fever; the surgeon knows that the signs of pelvic pressure may be mistaken for those of peripheral disease; the orthopedist knows that pain in the knee or hip may result from flat-foot, and that the symptoms of osteoarthritis are often erroneously attributed to hysteria or even to cord affection; the rhinologist knows that adenoids may cause night-terrors, that cerebro-spinal fluid may escape from the nostril, and that brow ague even though periodic may be due to disease of the frontal sinus as well as to malaria. It remains for the neurologist to have these and innumerable allied facts so far assimilated that he is ready to turn them to practical use in diagnosis by tracing to its cause and directing to its appropriate department the malady which has come under the observation of one not skilled in the branch of medicine peculiarly concerned. In other words, the *clearing house* function, constantly increasing in all professional work, has become the special province of our department.

To perform these duties it is necessary not only to acquire and keep up the familiarity with general medicine to which my predecessors have alluded, and upon which too much stress cannot be laid, but the neurologist must also keep in touch with the progress made in other specialities than his own. It should be impressed, therefore, upon the student proposing to devote himself to this branch of medicine, that the other specialities are not to be neglected in his training.

With the constantly extending demands upon his intellectual activity, and with the rapid advance of neurology and the collateral sciences, no one individual can hope to cover thoroughly every field of even this one specialty. Indeed with its broadening scope we may be forced eventually to recognize the neuro-pathologist, the clinical investigator and consultant, and the practising neurologist, though never, it is to be hoped, with restrictions well defined. While such tendencies may be the inevitable result of existing conditions,

and while the accurate observations resulting from concentrated study may further the cause of science, and indirectly benefit the community, it behooves the practitioner who will enter this field to bear constantly in mind the importance of keeping his interests general though the paths of his effective labor may narrow.

Even general practice tends toward subdivision. The general consultant is now summoned not merely to share the responsibility, and to add by weight of years and experience to the value of the opinion, but on account of his proficiency in some department within the domain of general medicine.

There need be little fear, however, that the family physician will be crowded from the field. While expert opinions are more and more in request, the very withdrawal of those with special aptitude and peculiar training leaves a demand to be met by those whose habit of mind, whose broad interest in humanity, whose adaptability to circumstances, and disregard of personal comfort, fit them to undertake the labors and accept the responsibilities of general practice.

The session is now open for scientific communications.

A CASE OF SIMPLE SEROUS CYST OF THE CEREBELLUM, WITH AUTOPSY.¹

By GEORGE W. JACOBY, M.D.

The case which I herewith present for your consideration is considered worthy of being reported because it was well observed during life, and yet did not admit of a positive clinical diagnosis; because it was completed by an autopsy which revealed a localization so precise as to savor almost of a physiologic experiment; and because the completed case has its value in connection with the question of cerebellar localization and the origin of cerebellar cysts.

The patient, a married woman, 31 years of age, mother of one child, came under my observation in November, 1897. The family history presented nothing noteworthy, and the patient herself had been healthy and uncomplaining as a child, and apparently well until 3 months previous to my seeing her. She was married at the age of 24, and was for a time thereafter restless and nervous, being unable to sit still for any length of time, picking her fingers, and biting her nails. This nervousness was not of long duration and two years later when she was visited, at her home in the West, by relatives, they found her to be the same as they had always known her, quiet, cheerful, and healthy. One trait of her previous life which was related to me merits special mention in view of subsequent occurrences; this was that she was never able to ride in a railway car without becoming nauseated and very soon being attacked by retching and vomiting. Aside from such railway journeys she never vomited.

In the summer of 1895 every one thought she was irritable, not markedly so, but still more than usual; she was also nervous and fussy, allowing every-day trifles to annoy and worry her. This irritability persisted and gradually became more and more pronounced until the summer of 1897, when it culminated in repeated outbreaks of anger, and in loss of self-control which was so great as to excite comment. At this time also she began to complain of feeling tired, and of vague pains in the lower part of the back. She began to lose in weight, and her body weight fell from 120 to 115 lbs. No other symptoms were present nor did she consider herself ac-

¹Read at the meeting of the American Neurological Association, June, 1901.

tually ill. About November 1, 1897, the first symptoms manifested themselves, which led her to seek medical advice; she then began to complain of dizziness; at first especially in the morning, shortly after rising, she experienced sensations of dizziness, feeling as though the room were turning around, then repeatedly, usually at the breakfast table, she would support her head in her hand saying that she was dizzy, that everything was swimming. After holding her head she would feel better; there was at that time no difficulty in walking, and no further loss in weight. For a week she kept up, being treated at the office of a physician, and during this time she was repeatedly examined without the discovery of any objective symptoms. The attacks of dizziness increased in frequency and intensity, and she was obliged to take to her bed.

During the following two or three weeks nausea and vomiting set in and were of more or less frequent occurrence, always following movements of the head and never taking place when she was at perfect rest. She complained of general weakness and appeared to be emaciating. She also showed certain psychic changes, becoming petulant, irritable and wilful, cried a great deal and appeared to be purely hysterical. About the middle of November she complained, for the first time, of headache, pain which she characterized as splitting and which was not specially localized. At this time she was examined carefully by her attending physician and by an ophthalmologist, again with negative result. It is necessary to emphasise the fact that her eyes were carefully and repeatedly examined, and fundus, muscles and visual field were always found normal.

Her gait was not then tested, but a relative who is a physician stated with certainty that there was no disorder of gait prior to her going to bed about the commencement of November.

When I examined the patient on November 27 I was unable to elicit a single objective symptom beyond that of general emaciation. The result of that examination and another one made a few days later was as follows: weight 95 lbs; temperature normal; pulse 76 to 84 per minute; thoracic and abdominal organs normal; amount of urine passed in 24 hours 56 oz.; urine contains neither albumin nor sugar. Eyes: visual field, muscles, fundus, normal; pupils equal and react promptly to light and accommodation; no nystagmus; smell, taste and hearing normal; no facial involvement; no hypoglossal involvement; a general weakness of the entire

body in accord with her general emaciation, was present, but no special weakness of any extremity or muscular group was discoverable, and the lower extremities showed absolutely no motor insufficiency. There was no ataxia and all her muscles were under complete control, she being able up to a certain reduced maximum, to regulate the force, and the extent of any voluntary movement. There was no tremor. The patellar reflexes were equal and lively, and sensation was normal in all its qualities. Subjectively she was weak and complained only of becoming dizzy when she raised or moved her head suddenly; once her head in a certain position, whether she was lying, sitting or standing, the dizziness passed away.

The subsequent history of the case is brief and is one of constant anorexia, gradual and marked emaciation, some headache, considerable vomiting, occasional dizziness occurring when the head was raised from the recumbent posture; and sudden death on January 11, 1898, about 9 weeks after the onset of the first distressing symptoms.

An analysis of the nurses' daily record and of my notes shows the relative preponderance of certain symptoms; thus the temperature remained throughout between 98° and 99°, usually being 98°; the pulse varied from 76 to 120; it was 84 on the majority of dates, rose to 100 on January 3, and remained above 100 until the end.

Respirations were normal as to frequency and quality during the entire time. The average quantity of urine passed was normal; there was never any polyuria, nor was any albumin or sugar found. Sleep was interfered with only on three nights, December 3, 13, and 25. Headache was complained of on 13 days, twelve of which were prior to December 26, so that the patient was practically free from headache from that date until her death. The character of the headache is noted as severe on 5 days, on each of which it was occipital and lasted all day; upon the other occasions the ache was slight, not specially localized, and passed away in a few hours. Pain or tenderness upon percussion of the head was not present. Vomiting occurred at least once, sometime oftener, on the majority of days, yet she was entirely free from vomiting on 20 days of the time here referred to; the longest consecutive period of freedom from vomiting was 5 days, while from December 29 until her death, she vomited repeatedly every day practically retaining no food and being nourished entirely per rectum. The vomiting was always projectile in character.

Her body weight on December 31 was only 84 lbs.

Her gait was again examined on January 7, and while indicative of general weakness gave no indication of swaying, staggering, or ataxia. On this day she sat up for a half hour without dizziness.

Her psychic state was peculiar in so far as during the entire time she was markedly susceptible to suggestive influence. This susceptibility may be illustrated by the following incident: On December 18 and 19 she lay all day with her eyes closed, saying that she could not open them; all her efforts to raise the lids were manifestly futile. On the 20th



Fig. I. Cyst of the right cerebellar hemisphere.

she was first told positively that she could keep her eyes open for five minutes, and then commanded to do so. The command was effective, and every few hours thereafter a similar order was given, the time allotted being suggestively increased; on the 22nd the disability had passed away and thereafter no trouble of this kind was experienced. The vomiting also could be influenced suggestively to a certain extent.

Exitus occurred suddenly and unexpectedly; although

she was very much emaciated and very weak, no indications of impending death were present.

The autopsy made 36 hours after death gave the following result: The lungs were not retracted and no adhesions were found; the left apex contained a small tubercular focus, while the right apex was perfectly normal; the heart was small, but showed nothing pathological. In the liver a number of thin walled cysts containing clear fluid were found. This was also the case in both kidneys. Each kidney contained numerous small cysts varying in size from that of a pea to a cherry; the contents were limpid in some, in others thick and syrup-like. The pelvis of the kidneys was markedly dilated the cortex of normal breadth and the papillæ shortened.

Ureters and adrenals, pancreas, intestines, ovaries and tubes normal. The stomach was dilated and empty.

The calvarium was very thick; it was easily removed and no adhesions to the dura were present. The sinus longitudinalis was empty, and the brain membranes showed no disorder. The brain itself was apparently normal in size, with smooth and unchanged vessels. The cerebellum at once gave evidence of being the seat of disease. The right half was markedly increased in size, the upper surface being prominent and fluctuating. The vermis was not deviating nor apparently compressed. An incision into the prominent fluctuating part of the right cerebellar hemisphere revealed a cyst, from which about 50 c.cm. of a clear watery fluid was evacuated. Chemical and microscopical examination of this cyst fluid revealed nothing of importance; no formed morphological elements nor hematoidin crystals were present.

The brain was then hardened for further examination. During this hardening process the whole cerebellum became badly distorted in consequence of lack of care, but the various parts and their relationship to each other were thereby not further disordered.

Upon examination after hardening the cyst was found to lie entirely in the quadrangular lobe and to have roughly the shape of an inclined pyramid, the base being in the inferior, and the apex in the superior portion of the lobe. Fig. I shows the shape and location very well. The cyst begins close to the outer margin of the flocculus and involves nearly all of the lower and internal portion of the lobus quadrangularis adjacent to the flocculus. The apex of the pyramid is in the upper portion of the quadrangular lobe opposite and external to the junction of the culmen and the declive of the monticu-

lus. Therefore the direction of the axis of the cyst is upward, inward and backward. Thus anatomically there can be no direct communication between the cyst and the lateral recesses or the subarachnoid space.

Many portions of cyst wall were taken, imbedded in celloidin, and cut to thickness of 10 to 15 micra. The stains employed were carmine, Van Gieson and Gudden. In all more than a hundred specimens were examined.

Microscopic examinations show that at all sides the cyst is covered by cerebellar tissue. The wall is often very thin, but still the same relation prevails at all parts, all specimens showing distinct cerebellar structure external to the cyst wall.

Fig. II represents a low-power picture of the external wall of the cyst, and shows the typical relation which obtains

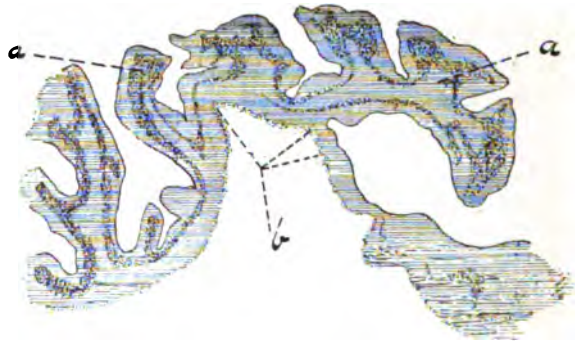


Fig. II. Topography of cerebellar cyst. *a a*, cerebellum. *b*, cyst wall.

throughout the cyst. Internally (at *b*) is the smooth lining cyst wall, and directly externally to it (at *a*) is the tissue of the cerebellum proper. This latter, of course, is slightly distorted and thinned, on account of the pressure from the distended cyst, but otherwise its structure is normal.

Fig. III shows a portion of the cyst wall (viz. *b* of Fig. II), magnified 500 diameters. Here we have characteristic neuroglia in the cyst wall. The small cells with their comparatively large nuclei, lying in the fibrillar network are typical. At the edge of the reticulum small isolated neuroglia cells, the so-called spider cells with their processes, may be seen. These can be still further isolated by teasing the cyst wall, and such a teased specimen magnified 1,000 diameters, is represented in fig. IV.

Upon first view the cyst wall as seen in fig. III looks somewhat gliomatous, but when we note how thin the layer of cells is, and that they are not crowded together closely and irregularly, the idea of glioma formation must be given up. This is still further emphasized by the representation in fig. V. Here we have a portion of the cyst wall taken at random from the many specimens at our disposal, and here the question of tumor structure cannot arise, for it is apparent that we are dealing with simple neuroglia. We here see that all the vessels (c) are in the surrounding tissue and do not run into the cyst wall, while in gliomata we are apt to find blood vessels, at least capillaries, running into the tumor structure.

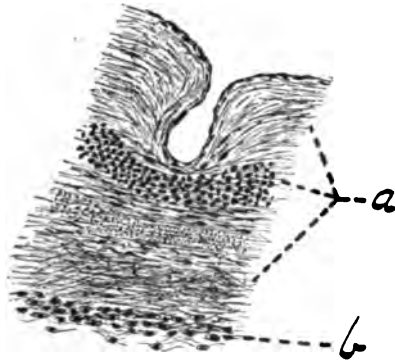


Fig. III. Portion of cyst wall magnified 500 diameters. *a*, cerebellum. *b*, cyst wall.

This is true also of all the other specimens examined, and the conclusion is thus warranted that the cyst wall is composed of neuroglia only.

The points of interest in this case appertain, firstly to the clinical picture and its relation to the pathological finding, and secondly to the nature and mode of origin of the cyst.

The clinical picture is understood when we recall that the symptoms of disease of the cerebellum may present themselves in two categories, viz., those common to any intracranial lesion, and those special to the cerebellum. In the light of modern investigations, concerning the structure of the cerebellum and its connections with other parts of the nervous system, we have learned that the cerebellum may be

considered the complementary center of a reflex arc, to which the centripetal fibers from the cord ascend and from which the centrifugal fibers descend. All of these fibers pass through the inferior peduncles. Above it is connected with the optic thalamus by means of fibers which originate in the red nuclei and pass down through the superior peduncles to enter the cerebellum. These fibers are essentially efferent, conducting from the thalamus to the cerebellum, and as such are of little interest in connection with the present subject.

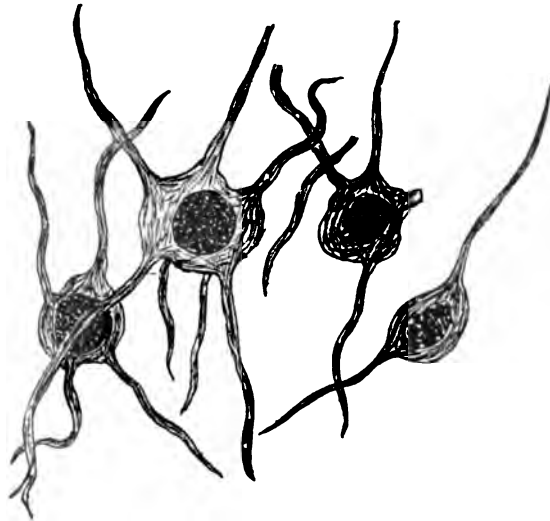


Fig. IV. Neuroglia cells teased from cyst wall.

The middle peduncles may also be here disregarded as they serve merely to connect the two lateral lobes of the cerebellum with each other.

Those tracts, however, that run to and from the cord through the inferior peduncles, and take their terminations or origin in the cerebellum, are the ones which concern us very materially.

In order to understand these different sets of fibers, it is necessary, as Bruce points out, to have a clear idea of how the fibers are given off from Deiters' nucleus. Until re-

cently very little was known about this nucleus, whose large cells greatly resemble the large motor cells of the anterior horns of the cord, and which on account of its location above and external to the nucleus of the n. acusticus (viii) was considered as an accessory acoustic nucleus.

Although one set of fibers which originates in Deiters' nucleus does join the acoustic and terminate in the semicircular canals, these are by no means the most important fibers given off by this nucleus. Two further bundles are given off which

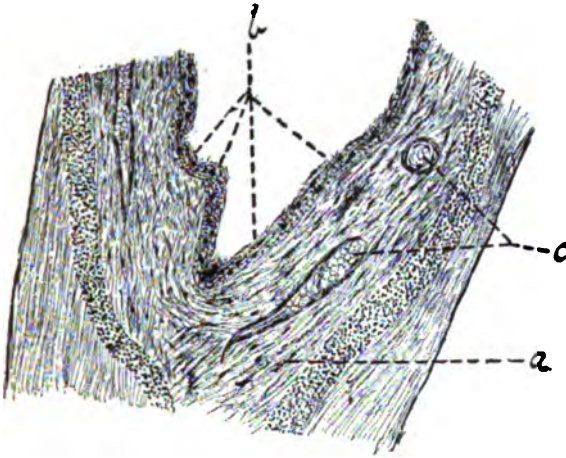


Fig. V. Portion of cyst wall. *a*, cerebellum. *b*, cyst wall. *c*, blood vessels.

descend to occupy certain positions in the cord; one of these sets of fibers splits up into two branches, which take their respective places in the anterior and lateral pyramidal tract, while the other set runs down, either crossed or uncrossed, to ramify in end brushes around the large motor cells of the anterior horn. It is now but a step to complete the spinocerebellar arc; on the one hand we have the crossed fibers from the olive coursing to the dentate nucleus of the opposite side and from here to the cortex of the vermis, while upon the other hand we have two bundles of spinal fibers running to Deiters' nucleus, which in turn gives off fibers to the

roof nucleus. Interference with this spino-cerebellar tract causes no change in tactile, temperature or pain sense, but does seriously impair muscular sense.

Deiters' nucleus furthermore has two very important connections, both of which are with the motor nuclei of the ocular muscles, and of which one set of fibers has been traced to oculomotor nuclei, the other to the abducens nucleus of the same side.

We thus have centripetal impulses reaching the cortex of the vermis by way of the dentate nucleus, and centrifugal, or motor, impulses from the cortex of the vermis distributed to the ocular muscles and to the spinal motor centers for the body and extremities. From all of which it is easy to see how extensively the nucleus of Deiters is related to the various structures which surround it, and how easily any disturbance involving this nucleus could cause severe disturbances both through the spinal and ocular tracts.

Of all the structures considered, the dentate nucleus is the only one which lies in the lateral lobes; but Edinger maintains that embryologically the dentate nucleus belongs to the vermis, a fact which adds considerable significance to our preceding considerations.

The most constant and characteristic symptom of injury or disease of the cerebellum alone are: the disorder in the maintenance of the body equilibrium or so-called cerebellar ataxia; dizziness; alterations in the position of the ocular axes; nystagmic jerkings, and finally, a weakness of the musculature of the body, which in a unilateral lesion is probably present upon the side of the lesion.

In short the symptoms may be summarized as ataxia and dizziness, both of which symptoms we would, from our anatomical knowledge, expect to be present if Deiters' nucleus were involved. Interference with the ocular and spinal fibers would give us disturbances in co-ordination and consequent ataxia, while involvement of the vestibular fibers of the eighth would cause dizziness. Now considering the location of Deiters' nucleus and its intimate relation with the surround-

ing structures, we may postulate that cerebellar symptoms would follow any involvement of that portion of the cerebellum lying between the two dentate nuclei, or in other words, of the vermis cerebelli. It has already been noticed, and often recorded, that very extensive lesions of the lateral lobes of the cerebellum have occurred with few or no cerebellar symptoms, and Nothnagel has pointed out that such lesions produce symptoms only when they also involve the middle lobe or vermis. Of course a tumor growth or any process causing enlargement of the hemispheres would give rise to some pressure upon the middle lobe and thereby produce some cerebellar symptoms. But Nothnagel has gone further and maintains that in any lesion causing loss of substance of the lateral lobes only, no cerebellar symptoms whatever will be found.

In our case then, the symptoms are in thorough accord with what the preceding considerations would lead us to expect. The cyst involves a large part of one lateral lobe but is confined entirely to the hemisphere, leaving the structure of the vermis free, even from pressure. All pressure which here existed must have been downward and inward so that none of the nuclei could have been implicated.

Yet dizziness, a cerebellar symptom, was present. In this connection it is necessary merely to recall the course of the eighth nerve before it makes its exit from between the transverse fibers of the pons and the external margin of the olive. Here the anterior root has already received the vestibular fibers from Deiters' nucleus, so that pressure at any point in this vicinity would give us the vestibular symptom. The dizziness accompanying disease or involvement of the eighth nerve causes the patient to feel as though he were being whirled through space—a sensation which may be constant or occur only in attacks. This is practically the same characterisation as that of cerebellar dizziness, and there can hardly be a doubt that the symptom is produced by a disturbance in Deiters' nucleus by way of the vestibular tract to the acoustic nerve.

A brief retrospect thus shows us that all of the symptoms in our case fit the pathologic finding. The only symptoms present, with the exception of the dizziness, are those which would be caused by any intracranial growth or condition causing intracranial pressure; the dizziness on the other hand could have been caused by any disorder involving the middle ear, or acoustic fibers at any point in their course from the semicircular canals to their origin, and so does not necessarily indicate cerebellar disease. From all this it seems to us that no localization of the process could have been made during life. Having reconciled the clinical picture with the pathologic finding let us turn to the question of the origin of the cyst.

Various kinds of cysts are met with in the cerebellum; there are the hydatid cysts, those due to *cysticercus cellulosæ*, the cysts which are the result of hemorrhage or softening, and those due to cystic degeneration of neoplasms such as gliomata or sarcomata; or there may occur cystoid dilatations, eversions of the ventricles, or the transformation into a cyst, of pre-existing physiologic cavities, such as the lateral recesses, through agglutination of their walls.

Such separation from the original cavity may take place during fetal life, in consequence of developmental anomalies, while the transformation into a cyst is set up at a much later period. In addition to the foregoing there exists a comparatively rare variety of cerebellar cyst, of which a number of cases have been described and which upon post-mortem examination have revealed a cyst containing clear fluid, but giving no evidence of having been produced by any of the ways already mentioned. Such cases can be described only as simple serous cysts of obscure origin.

Our case giving no evidence of hydatids, *cysticercus cellulosæ*, hemorrhage, hematoidin crystals, nor tumor growth, and the absence of epithelial or endothelial cells precluding the formation from a pre-existing ventricular cavity, I can range it in no other class than that of simple serous cyst. I do this in full knowledge of the cases described by

Williamson. This observer has met with two cases in which careful dissection and fairly complete microscopic examination failed to give any evidence of new growth; yet a more extended examination revealed a very small patch of tumor formation in a part of the cyst wall. In case I of Williamson in the entire wall of the cyst, which was nearly the size of a pigeon's egg, no evidence of new growth was detected, with the exception of one spot, which proved to be a minute oval glioma measuring only 2.5 by 4 millimeters; nearly one-half of this neoplasm consisted of blood vessels.

In connection with this case Williamson himself says: "If a tumor growth can undergo cystic degeneration to such an extent that the only remaining new growth shall be of the dimensions just mentioned, it does not seem improbable that in some cases the whole of the growth may disappear and only a cyst remain."

In my case the entire cyst wall was carefully examined with a magnifying glass and nothing but a perfectly smooth cyst wall was found. Sections for microscopic examination were then taken from various parts of the cyst wall and, considering the number of sections made, practically the entire area was examined.

The fact that this examination failed to reveal any evidences of new growth does of course not answer Williamson's hypothesis of a possible complete absorption of such a growth. If, however, we add the other facts in the case, viz., the absence of all symptoms in the history pointing to the growth of a tumor, the inability to give any other satisfactory explanation as to the origin of the cyst, and the fact that the autopsy showed cysts in other organs, in the liver and kidneys, a fact which warrants the assumption of a common origin of all the cysts, then I can arrive at no more satisfactory conclusion than the one that we are dealing in this case with a simple serous cyst. Whether such a cyst may arise in consequence of dilatation of a lymph space, or whether such cystic formation is of congenital origin, as cystic kidney and liver are by some authors assumed to be, are questions which merit consideration, but cannot be decided.

BINOCULAR HEMIANOPSIA AND OPTIC NERVE ATROPHY IN A CASE OF DIABETES MELLITUS.¹

By HOWARD F. HANSELL, M.D., PHILADELPHIA.

On November 22, 1900, Dr. Cunningham, of Vineland, New Jersey, referred to the Eye Department of the Jefferson Hospital, Mrs. E. W., aged 55, on account of failing vision. He wrote that the patient's vision had been decreasing for the past 6 years and that he had been unable to find that the cause lay in an error of refraction. At the time of her visit vision equalled R. 20-200; L. 20-200, not improved by glasses. The ophthalmoscope showed clear media and advancing atrophy of the optic nerves. The retinal arteries and veins were diminished in size. There were no patches of exudation or of hemorrhage in the retina. The pupils were equal and responsive, sluggishly to light, actively to accommodation. Dr. Cunningham reported that the patient had been suffering from diabetes mellitus many years, but for some weeks the urine had been free from sugar. The quantity in 24 hours did not exceed the normal. The percentage of sugar at the height of the disease had varied from 6 to 8%. He had regulated her diet and administered codeine with the result of causing the disappearance of the sugar.

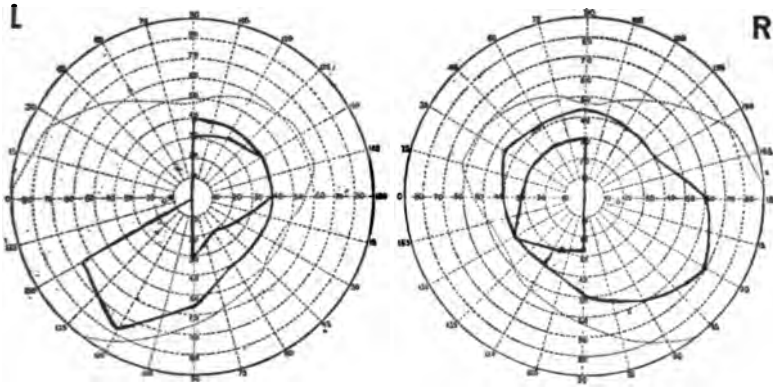
The most remarkable ocular symptom in this case was the peculiar limitation of the fields. They were limited in all directions and were irregularly hemianopic, with detached scotomata. The perimetric measurements were repeatedly made and with great care upon the hospital perimeter. Figs. I and II are the charts made with white and colored test objects 5 mm. square; the larger boundary indicating limits for white, the smaller for colors.

The atrophy of both nerves had advanced to about an equal degree, both fields were irregularly hemianopic and showed considerable difference in their forms; the boundary

¹Read before the Section of Ophthalmology, College of Physicians of Philadelphia, Feb. 19, 1901.

line between the seeing and the blind fields was sharply outlined by the one candle power, 1 cm. electric light.

The patient was referred to Dr. Dercum, of the Neurological Department, who reported probable disease of the 4th ventricle, basing this diagnosis upon the diabetes and upon the ophthalmic report which was confirmed by repeated observations. The urine report made December 6: Reaction very acid, specific gravity 1034; urea 1 $\frac{3}{4}$ %; sugar present by Fehling's, Boettger's and Trommer's test; quantitative estimation of glucose shows 3 gr. to the fluid ounce, or about $\frac{1}{2}$ %; no casts; no albumin.



Figs. I and II. Charts made with white and colored test objects, 5 mm. square; the larger boundary indicating the limits for white, the smaller for colors.

The ocular complications of diabetes are so varied and the literature so extensive that it is beyond the limits of a clinical paper to give more space than that required for simple enumeration, excepting the complications especially illustrated by the reported case. Lawford, in Norris and Oliver's System, describes them in the following order: Failure of accommodation; mydriasis; increase of refraction; paralysis of ocular muscles; keratitis, iritis and iridocyclitis; cataract; retinitis and disease of the optic nerve.

Optic nerve disease has been described by Leber² under

²Graefe Saemisch Handbuch, Vol. iv.

three headings: (1) Amblyopia without ophthalmoscopic changes with or without limitation of the field; (2) Atrophy; (3) Hemianopsia. He believes in the few cases of hemianopsia reported the defective vision was not due to the glycosuria but to the localized intracranial disease. R. T. Williamson, in his work on "Diabetes Mellitus and Its Treatment," 1898, does not mention hemianopsia among the eye symptoms of diabetes. He describes at length the differential diagnosis between diabetic retinitis and albuminuric retinitis, and refers most of the causes of the defective vision to the retinitis, failure of accommodation and vitreous opacities. Galezowski,³ reports the case of a man 58 years old with myopia of 5 D. who had suffered for two years with right homonymous hemianopsia that had suddenly appeared. He sought advice on account of diabetic keratitis. This patient also had anesthesia of the left cornea. The author questioned whether this complication was simply a symptom of paralysis of the 5th nerve or whether it also could be referred to an intracranial lesion. He was inclined to refer also the keratitis to a central disturbance. He collected 10 cases of diabetic keratitis of which this was the only one with hemianopsia.

Atrophy of the optic nerve in diabetes is either primary or secondary to retinitis. In the former the loss of visual acuity is rapidly progressive until it is complete. The field shows contraction, sometimes concentric, sometimes irregular. The ophthalmoscopic appearances are those usual to simple optic nerve atrophy. Lawford⁴ says the complication is extremely rare and the cases on record in which simple optic nerve atrophy was present are few in number and in several of them it is questionable if the optic nerve lesion should be considered the result of the glycosuria. "Of fifty cases with ocular symptoms, observed by Leber⁵ there were fourteen, *i.e.*, twenty-eight per cent., with optic nerve trouble." In two cases in which a post-mortem examination was made a tumor was found

³Recueil de Ophtal., 1879.

⁴Norris and Oliver's System.

⁵Bericht der ophthal. Gesell., Heidelberg, 1896, S. 104.

pressing on the optic chiasm in one, and in the other there was no cerebral lesion, but there was distinct degeneration of the kidneys. Williamson says it is stated that occasionally the retinal changes are associated with primary optic nerve atrophy and he gives an illustration of such a case. He also says that it is exceedingly rare that a central lesion has given rise to an optic neuritis and glycosuria in the same patient. In the examination of 140 diabetic patients, Schmidt-Rimpler⁶ obtained evidence of retro-bulbar neuritis not traceable to the abuse of alcohol or tobacco in 34. In one case, distinct atrophy of the macular fibers of the optic nerve was found on microscopical examination. Wiesinger⁷ describes in detail a patient 57 years old with plastic iritis who had amblyopia; the ophthalmoscopic appearances were those of simple optic nerve atrophy without other limitation of the field than color scotoma; and another case with recurring iritis, senile cataract, glaucoma, and finally optic nerve atrophy of the left eye, all of which symptoms he traced to diabetes.

Oscar Dodd⁸ in an able article on diabetic retinitis has published a list of 47 cases with their references; among them I find some that bear on the subject of this paper, which I will briefly mention: No. 4, Haltenhoff,⁹ duration of disease 5 years, grayish-white papilla not clearly marked; No. 10, Culbertson,¹⁰ patient recovered but right eye terminated in atrophy of retina and optic nerve; No. 17, Legrange,¹¹ duration of disease 5 years, right eye edema of papilla with small hemorrhages around it, left eye papilla excavated and atrophied without increase of tension; No. 19, Legrange,¹² papilla swollen and irregular in outline; No. 25, Legrange,¹³ optic nerve, left eye, atrophied, commencing atrophy of right optic nerve. Thus, among all the cases, he mentions only 4 that had distinct optic nerve inflammation or atrophy, and

⁶Ber. d. ophthal, Gesell., Heidelberg, 1896.

⁷Arch. f. Oph., 1885, No. 2.

⁸Arch. of Oph., April, 1895.

⁹Zehender's klin. Monatsb. f. Augen, 1893.

¹⁰Detroit Lancet, 1882.

¹¹Arch. d'Ophthal, 1887.

¹²Ibid.

¹³Ibid.

makes no comment whatever in the table upon the visual fields of these patients. He believes the optic atrophy to be due, in at least some of the cases, to embolus of the central vein.

Nettleship¹⁴ describes the pathology of ocular changes, in which but very few investigations have been made, as follows: Most of the changes were found in the blood vessels of the kidneys, spleen, liver and some of the smaller vessels of the brain. There was thickening of the retina in all its layers with numerous varicose swellings; the nerve fibers were slightly swollen and meshes formed by the separated fibers were partly empty and partly filled by swellings similar to those in the retina. In the other layers there was a chronic edema with hypertrophy of the connective tissue frame-work. The retinal arteries were greatly changed; thickenings were present between the epithelium and fenestrated membrane, contracting the lumen. The relative thickening was much greater in the very minute arteries than in those of larger size; the muscular coat was not generally affected; the veins were distended without alteration of their coats; the capillaries of all parts were distended with groups of aneurysms.

Mr. Lawford¹⁵ made the microscopical examination of an eye in case No. 11, reported by Nettleship, in which the changes recorded were those mentioned above. Dodd says that edema and active changes of the retina and optic nerve are rarely present, and gives this as one of the chief distinguishing features between diabetic and albuminuric retinitis. Embolism of the retinal artery was present in two cases, thrombosis of the central vein in one case (de Wecker and Masselon). Juler¹⁶ says "In the early stage papillitis is not a marked sign, but later it becomes very prominent."

It would seem from this imperfect review of the most recent writings, that optic nerve disease is a rare complication of diabetes, and that the inflammatory changes of recurring double iritis are the most common. Amblyopia without oph-

¹⁴Opthal. Hosp. Rep. Vol. ix., 1877.

¹⁵Trans. Oph. Soc. U. K., 1882.

¹⁶Handbook Oph. Science, 1893.

thalmoscopic changes, so often referred to by writers, is probably due in all cases to an intracranial lesion or is the earliest stage of the retro-bulbar neuritis which leads to atrophy. Hemianopsia, optic nerve atrophy and amblyopia, are probably but indications of the three stages of one affection, namely, retro-bulbar neuritis terminating in atrophy. The case above reported seems to prove the truth of this statement, because (1) the patient has rapidly failing vision; (2) an ill-defined but still unmistakable hemianopsia; and (3) double optic nerve atrophy. The opportunity of examining a patient in this late stage of diabetes without inflammatory changes or loss of transparency in any of the media, can rarely occur and the report of the case seems to me worthy to be placed on record.

REPORT OF A CASE OF MELANCHOLIA FOLLOWED BY
STUPOR LASTING THREE YEARS AND
EIGHT MONTHS; RECOVERY.

By CECIL MAC COY, M.D.

ASSISTANT PHYSICIAN BINGHAMTON STATE HOSPITAL.

Michael D., aged 28, one of twins, single, laborer, of intemperate habits, and with a specific history, was admitted November, 1895, to the Binghamton State Hospital. The duration of the insanity dated back two weeks previous to his admission to the hospital. On admission he gave a history common to alcoholic melancholiacs, *i.e.*, of excessive use of alcohol and tobacco, of gastritis, lack of food and sleep, together with untreated syphilis. He attempted to commit suicide by hanging and drowning, but was rescued both times.

From November, 1895, until September, 1896, his history was of the ordinary type of melancholia. He exhibited hallucinations of hearing and sight, marked delusions of persecution, fear of impending evil, etc. He would not converse with those about him, and his appetite was poor and he seemed to be slowly becoming demented.

In September, 1896, he refused to leave his bed. Here he remained in a condition of stupor refusing to move, to accept any nourishment, and in a completely untidy condition, for three years and eight months, until May, 1900. During this latter period he constantly received anti-syphilitic treatment. He was fed three times a day by a nasal tube and bulb syringe, receiving at each meal a pint of milk, two eggs, salt and sugar.

Photograph 1 illustrates his position during his stay in bed. In order that bedsores should not develop, his back was daily rubbed with alcohol and water, equal parts, and several times during the day he was turned from his back to his right or left side. In the early months of 1900 a strong faradic current was daily applied to the various groups of muscles. During the appliance the expression on his face showed his dislike and pain at this therapeutic procedure, but he refused to make any motion of resistance. In May, 1900, he commenced to show signs of returning mental activity. Occasionally he would open his eyes and wink them for several minutes at a time, and shift himself about his bed to assume a comfortable attitude. In every movement he was encouraged, and in June, 1900, he sat up unassisted in his bed

and ate a meal of soft diet for the first time in over three years and a half. Directly following this, he was dressed and has since slowly improved in both mental and physical condition until at the present time his general health is so comfortable that he will shortly be discharged recovered.

Picture 2 was taken quite recently. His own story of himself and his condition is as follows: "The trouble was with me that I took too much whiskey. I took all I could get, and I didn't get enough food. Then way back in 1890 I had a sore, and a couple of doctors treated me with tincture of iron and iodine, but I guess they didn't cure me. The first time I heard a voice calling me names was during the



Fig. 1. Position of the patient during his stay in bed.

summer of 1894 when I was tramping it with my brother along the Erie road. We were hungry and we visited a large institution, and while waiting in the kitchen for some one to give us a meal, I heard people shouting at me, 'Tramp, thief,' etc. On this account we both left the kitchen without waiting for our food. For nearly a year after this I drank pretty hard but never heard any voice until a couple of weeks before they sent me to the hospital. At this time I was in a saloon and hadn't had anything to eat for ten or twelve days. It was about election time and a prominent politician addressed me and asked me to drink. For some reason I refused and when he left the saloon I could hear him curse me and his curses

rang in my ears for hours afterwards. Here I made up my mind that I was sick and needed care, so I decided to act disorderly and get arrested. This was easily accomplished and soon I was in jail for ten days. Here in order to get more attention than I was receiving I tried to hang myself, but with poor success although I did get a little medicine - I couldn't sleep, my brain was on fire from the alcohol I had



Fig. II. Photograph of the patient after he had recovered.

been drinking. I wanted care and couldn't get it and the voice still followed me accusing me of all manner of vile acts. When my ten days were up they discharged me and I decided once more to try to end my life. So I stole a boat in front of a West End hotel shed on the Chemung river and rowed out in the middle where I jumped over, hoping that

the water was deep enough to drown me. I guess the water was pretty cold, because they told me afterwards that I yelled for help, and I was rescued and sent to jail. I remember coming to the hospital, I recollect some things that were said to me before I went to bed, but I had an idea that it was my place to keep quiet and let the doctors change me as they saw fit, and when I first came to the hospital some one said it was one of the rules to keep still. When I staid in bed I did so because I thought I didn't have any muscles, something told me to lie still with my eyes closed. I have no recollection of how long I was there, but I could usually tell the time of day by what was going on in the ward. I remember the ointment being rubbed into me, and the electricity which hurt me, but I was afraid to open my eyes because everybody that I looked at turned white and became as wicked as I was. The only reason I ever spoke was that after being carried out on the ward veranda one warm day, my appetite got the best of me and the food smelled so good that I was obliged to ask for something more substantial than milk and eggs."

Another case about parallel in its course to the above, but with shorter duration of stupor, is that of John Q., admitted January, 1895, aged 30 years, married, cigarmaker. Cause of insanity, the grippe. This patient became stuporous on admission, and remained in bed in a rigid state for twenty-one months when he regained his consciousness but retained his persecutory delusions for two years, at which time he was discharged, and is now actively engaged in his trade, supporting himself and family in comfort.

A CASE OF PERONEAL MUSCULAR ATROPHY
(TYPE CHARCOT-MARIE).

BY CHARLES GILBERT CHADDOCK, M.D.,

PROFESSOR OF DISEASES OF THE NERVOUS SYSTEM, MARION-SIMS
COLLEGE OF MEDICINE, ST. LOUIS.

The following case is worthy of record as a clinical example of the type of peroneal muscular atrophy.

The patient, an intelligent, unmarried man, aged 42 years, gives a very clear history of his trouble, and of his family.

The family history is entirely negative, except concerning the father, of whom the patient remembers nothing, though he has never been told that his father had any symptoms like his own. An only sister has five healthy children. His mother died of an acute intestinal disorder. A half-brother of his father died of pulmonary tuberculosis.

The patient is 6 feet 3 inches tall, and weighs 156 lbs. He has never weighed more than 165 lbs. He walks with some difficulty. His gait is distinctly that of "steppage," owing to bilateral foot-drop. While standing he constantly changes the position of his feet (treading) in order to maintain his equilibrium, using his eyes at the same time as an aid. He cannot stand still and talk with a person without the aid of a cane or other support. At night he feels very uncertain in walking. He is left-handed but uses his right hand in writing. The grip in each hand is very powerful, but there is clearly a slight degree of incoördination in the hands; for he buttons his clothing with difficulty, and coarse coördinated movements of the arms show some slight lack of precision. He is not aware of any trouble in his hands or arms.

The face and tongue present no peculiarities. The eyes are in all respects normal save for a slight degree of presbyopia of recent date. All the higher senses are normal. There are no anomalies of the vegetative organs, and his general health is excellent.

Of late years the patient has found occupation in a country store. As a school teacher he became unable to move about with required promptness. Before teaching school he did farm work.

He was healthy until the age of 16, and then had an attack of acute articular rheumatism; one joint after another became swollen and painful, and he was ill for six weeks.

About fifteen years ago he noticed the gradual development of numerous, very painful corns on both feet. To avoid

pain he tried walking in various ways, and finally some twelve years ago, after suffering with corns for a long time, he began to have shoes made to prevent suffering. At this time he noticed that his toes had become flexed, this causing prominence of the joints. He cannot recall the beginning of the weakness and atrophy now so noticeable in his legs, for as he states, both have developed so gradually. Aside from the pain due to corns, he has never had any kind of pain in his legs, though occasionally he has cramps in the calves of his legs at night, so severe that he has to get up and walk about to get relief.

He has never been a drinker, but has chewed tobacco to excess for years. He has never had any venereal disease. Five years ago he had pneumonia, and an attack of malaria three years ago.

During the last five years he has noticed a decided weakening of sexual power; lack of desire and infrequency and deficiency of erection. At no time has there been any vesical or rectal disturbance.

He states that he has seen, and more frequently felt, twitchings in the muscles of his legs; but this on the whole was rare and has not been noticed of late.

As already stated, the gait is that of "steppage" with a slight, though very evident, degree of incoördination. Romberg's sign is very marked. Without assistance, the patient would fall in an attempt to stand with the eyes closed.

Careful examination of the sensory functions reveals no disturbance anywhere of senses of touch, pain, and temperature. With his eyes closed, the patient is perfectly aware of the position of all his limbs, and he instantly and correctly indicates any passive movements communicated to arms, legs, hands, feet, fingers or toes.

Voluntary movement is everywhere normal, except in the legs and feet. He can move the left foot slightly in dorsal flexion. He can extend the right great toe slightly. All other voluntary movements of the feet and toes are impossible.

The power of the muscles of the thighs is normal, save for some slight weakness of the flexors of the knee on each side. When leaning forward, the patient has some trouble in bringing the trunk to an erect position on the pelvis. The muscles of the buttocks are soft and flabby, and evidently weak though not reduced in volume when compared with the musculature in general. Flexion of the thighs on the pelvis is normal in force. In the upper extremities there is nothing abnormal in movement, but there is distinct weakness of the right deltoid, without atrophy.

Fibrillary twitching is noticeable in the outer heads of each gastrocnemius muscle close to the knee as the patient stands.

The spinal column is markedly prominent in the lower dorsal and lumbar regions; a general and equal prominence without an angle.

There is marked vasomotor disturbance in the legs. The thighs are warm as low as the beginning of the lower third, but from this point downwards the limbs are cold, and the feet are bluish and a little edematous. The patient has a sensation of coldness of feet and legs, and goes to great trouble in dressing to keep them warm.

The toe-nails are much thickened and corrugated. He has no corns at the present time.

There is no tenderness of muscles or nerve-trunks anywhere.

Muscular atrophy is far advanced in all the muscles of both legs, and is quite symmetrical; it is noticeable in the thighs up to the beginning of the middle third. The vasomotor anomaly has a distribution exactly corresponding with the distribution of muscular atrophy.

The deformity due to the muscular atrophy is double talipes equino-varus of moderate degree. There is retraction shown in the flexed and elevated position of the toes, but the feet are "balottants," when the leg is passively shaken.

All the superficial reflexes are present and lively. The plantar reflex is remarkably lively, with flexion (slight) of the toes, and retraction of the whole limb (both sides). The deep reflexes at the ankles are absent. The knee-jerks are both present. That on the right side is very slight without reinforcement; that on the left side appears feebly with Jendrassik's maneuver. The reflexes of the upper extremities are normal.

All the muscles of the thighs, even the atrophied recti, respond normally to faradism and galvanism. In the muscles of the legs and feet no response to either can be obtained. Elsewhere electrical reactions are normal.

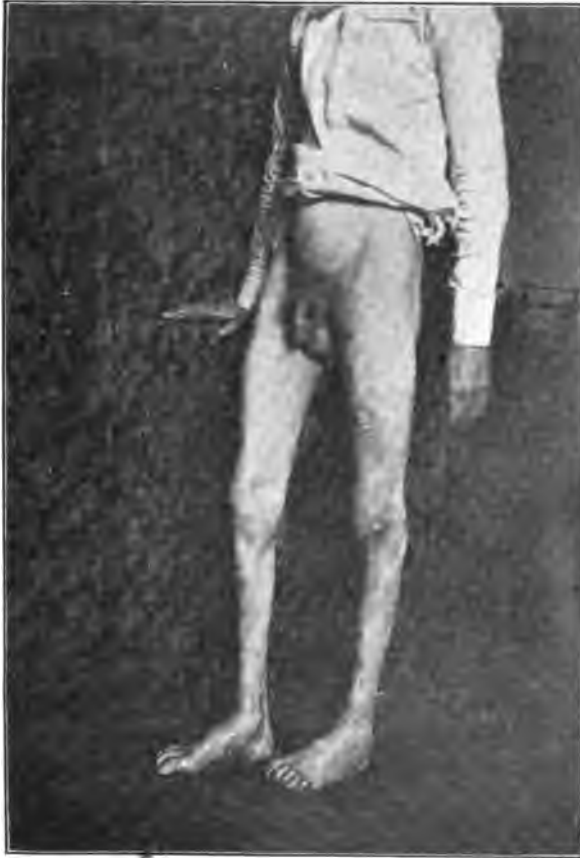
The accompanying reproduction of a photograph shows clearly the areas affected by the muscular atrophy.

The history of this case shows that the trouble began about the age of 24; that probably the peroneals and extensors of feet and toes were first attacked (corns due to flexion of toes). Doubtless the weakness and atrophy of the muscles of the legs developed *pari passu*, and came on so insidiously and slowly that years elapsed before the patient

knew to what to attribute his increasing difficulty in walking, deceived at first by the assumption that it was entirely due to corns.

The family etiological element is entirely wanting. Acute rheumatism eight years before the trouble was noticed is worthy of emphasis.

The case corresponds in all points with cases of amyotro-



The photograph shows the areas affected by the muscular atrophy. phy of the Charcot-Marie type, but there is one symptom present, the absence of which is emphasized in all cases thus far reported, and which I have not seen in any case that has come under my observation, *i.e.*, the marked and unmistake-

able Romberg's sign. If, as is held by some observers, the posterior columns of the cord are degenerated in this disease, the usual absence of Romberg's sign calls for explanation.

In this case there is some evidence that other muscles are destined to be invaded, as shown by the condition of the glutei and the right deltoid. The right thenar muscles also present a suspicion of atrophy. The slight incoördination of the hands and arms is also noteworthy.

The weakening of sexual power in this patient is a symptom to which I have found no reference in recorded cases of this disease.

It should be added in conclusion that the patient has always lived in a very low malarial district near the Mississippi.

NEW YORK NEUROLOGICAL SOCIETY.

March 5, 1901.

The President, Dr. Joseph Collins, in the chair.

A CASE FOR DIAGNOSIS.

Dr. Joseph Collins presented a boy of ten years who had a complex of symptoms which could not easily be placed under any one designation. He was one of twelve children, seven of whom had had in infancy marasmus or gastro-intestinal disorders. The present ailment had begun about nine months ago, at which time the boy had commenced to "hop." He complained of pain in the great toe of the left side, and also of pain in the precordial region. He had then been taken to the Mt. Sinai Hospital, and while there some stiffness or weakness in the lower limbs on walking had been observed. This impairment of motion had steadily increased, so that at the present time he was practically unable to walk more than a few steps. According to the history great difficulty in commencing the act of micturition had been experienced. At present there were no symptoms referable to the bowel or bladder. He has a peculiar waddling gait, and when standing, there is a typical flat-foot. There is a peculiar knocking together of the thighs. The spasticity of the gait had been found, on closer examination, to be more apparent than real. There is a marked ankle-clonus, but no sensory disturbances. The boy gets up from the reclining position as children do in the early stages of progressive muscular dystrophy. These symptoms, the speaker said, seemed to point distinctly to a lesion in the spinal cord in the crossed pyramidal tracts.

Dr. Sachs said that he had been much interested in this boy at the time he had been in the hospital. The combination of the waddling gait, so characteristic of muscular dystrophy, with an increase in the reflexes, seemed to be very unusual. When the boy was stripped, it seemed to Dr. Sachs very evident that he had progressive muscular atrophy. In addition to this he thought there was a subacute myelitis, possibly of traumatic origin. There could be no question that the calves were hypertrophied. This diagnosis had been arrived at only after careful observation for a period of several weeks. The frequent falls which such children have, would easily explain the occurrence of a subacute myelitis. The spasticity had been more marked nine weeks ago.

Dr. Graeme M. Hammond said that from the cursory examination that he had made he felt inclined to accept the diagnosis given by Dr. Sachs.

Dr. William M. Leszynsky said that it seemed to him to be a very atypical case. He had seen quite a number of patients in

whom there had been complete spasticity, and yet the ankle-clonus had been very marked.

Dr. Joseph Fraenkel said that the most prominent symptoms were those of disease of the lateral and posterior columns. At first sight the gait was that of ataxic paraplegia. On the supposition that the myelitis was the later disease, one would expect less evidence of the second. The evidences of pseudo-hypertrophy were certainly quite trifling, while the disease of the cord was very marked. He inclined to the diagnosis of a subacute multiple sclerosis of a paraplegic type.

Dr. J. Arthur Booth said that there was certainly a greater deposit of soft tissue in the left than in the right calf. He accepted the diagnosis given by Dr. Sachs.

Dr. Collins thought it was safe to assume that the boy had a dystrophy, but not that there was a subacute myelitis. No one could say whether the changes in the spinal cord which accompany the dystrophies are not of such nature that double ankle-clonus and double knee-jerk might not develop. It was certainly a form of dystrophy which did not conform strictly to the description of any usually given. If there were an implication of the cord it was confined entirely to the crossed pyramidal tracts. He would not be willing to admit that there were any changes in the spinal cord except secondary ones.

PROGRESSIVE MUSCULAR DYSTROPHIES WITH A REPORT OF A POST-MORTEM EXAMINATION.

Drs. B. Sachs and Harlow Brooks presented this paper. The authors stated that it could not be denied that there was any sufficient distinction between the amyotrophies and the dystrophies. In former years much stress had been laid on the muscular structure. Hypertrophied fibers were found in abundance in dystrophies, whereas in the amyotrophies these fibers were not found. But later it had been shown that the hypertrophied fibers were found in other diseases than dystrophies. It was also a question whether the gray matter of the cord was affected in the primary dystrophies. The case to be reported was one of progressive muscular dystrophy of fifteen years' duration, yet the structural changes, as demonstrated by the latest methods of staining, were very slight. The patient had been admitted to the Montefiore Home eleven years ago at the age of twelve years. Early in life the parents had noticed peculiar movements of the head and eyes. He had been in good health up to about the age of ten years when he had fallen and broken his leg. At the age of twelve years, after an attack of typhoid fever, the calves were observed to be decidedly hypertrophied. The head was enlarged and exhibited certain movements. There was a marked atrophy of all the muscles of the shoulder-girdle, arm and forearm. The deep spinal muscles were intensely atrophied. The thigh muscles were atrophied. The case became an ex-

treme illustration of a progressive muscular disease of the pseudo-hypertrophic type. The lad's intelligence was fair.

Dr. Brooks said that at the autopsy the organs were normal with the exception of an acute pneumonia and slight myocarditis. There were no gross lesions of the brain or spinal cord. No lesion of the smooth voluntary muscular tissue could be found anywhere in the body. The psoas muscle showed extensive fibrosis. All the muscles of the back showed extensive fibroid replacement, and in places there was a replacement by yellow fat. The trapezii were very extensively invaded. The most extreme changes were in the muscles of the calves, where normal muscular tissue was lost. The autopsy had been done twenty-four hours after death, and at that time there had been no evidence of post-mortem decomposition. On microscopical examination, the muscles showed extensive replacement with areolar tissue of the adult type. In the calf, occasional remnants of voluntary muscle were found. Most of the fibers of the psoas muscles were either larger or smaller than normal. The course striæ could usually be made out. The changes in the other voluntary muscles were of the same character, though varying in extent. In the occipital muscles the amount of connective tissue hyperplasia was less, but nuclear proliferation was prominent. Examination of various portions of the smooth muscles failed to show degeneration or hyperplasia of the connective tissue forming its framework. The heart muscle showed much less connective tissue increase than had been expected from the gross examination. The cardiac muscle was in a very natural condition, there being no atrophy, no abnormal pigmentation or abnormal nuclear activity. The blood vessels in the various tissues showed uniformly an increase in the connective tissue. No evidences of new vessel formation were found. Numerous peripheral nerves were examined, but no appreciable degeneration of fibers was discovered. Only a few of the spinal ganglia had been properly prepared for examination, but these few showed a shrinkage of the ganglion cells similar to that produced by fixing agents. The irregular perilymphatic spaces were, however, found filled with proliferating capsular cells, apparently indicating that this was not an artefact, but a distinct pathological process. Apparently the connective tissue of the ganglia had been increased. The connective tissue throughout the entire cord was found to be increased. The blood vessels of the cord were universally congested, but this was apparently of a hypostatic nature, due to the position of the patient before

death. Nothing in the nature of a systemic degeneration of the fibers was found at any level. In the cervical region the ganglion cells in the anterior horn showed a slight nuclear eccentricity. The dendrites universally retained their power to respond to the stain. Occasionally the achromatic elements stained to a slight degree. Eccentricity of the nucleus was found more commonly in the dorsal cord than elsewhere. Lesions in the cells of the posterior horns were more infrequent than in the anterior horns. The most common lesion was a finely granular subdivision of the plaques, usually not involving the entire cytoplasm. A few of the lumbar cells showed an unusual amount of brown pigment collected about the nucleus.

The chief lesions were: (1) Extensive atrophy, which affected apparently all of the voluntary skeletal muscles and was confined to these muscles; (2) the production of areolar connective tissue and adipose; (3) slight general perivascular hyperplasia; (4) moderate interstitial myocarditis; (5) extensive degenerative changes in a few of the posterior root ganglia, and (6) rare changes in the cytoplasm of the ganglion cells of the spinal cord.

The complete absence of the changes in the smooth muscles showed that the disease process was strictly localised in the voluntary muscular system. The authors did not look upon the connective tissue increase as an essential feature of the pathological process, but as an example of a universal function of this tissue to take the place of any tissue had been removed. The perivascular connective tissue hyperplasia was very slight, and could not be considered typical of the disease or as produced by it. Possibly the moderate myocarditis was associated with the connective tissue hyperplasia of the blood vessels. It did not seem to be in any way connected with the factors producing atrophy of the voluntary muscles. The changes in the posterior root ganglia seemed to be of great significance, though it was not clear that they bore any direct relation to the changes in the voluntary muscles. These degenerations seemed to be secondary in their nature, and dependent upon death or disease of certain portions of the neurone. A process similar to this occurred after amputation. There were, therefore, no evidences of tract disease. The cytoplasmic degeneration of the ganglion cells in the cord were rare, and might represent the early stage of post-mortem change. Dr. Sachs said that these findings did not indicate that the cause was to be found in the gray matter of the cord. The disease represents

a primary affection of the muscular fiber. The occurrence of stigmata of degeneration in so many cases of this dystrophy would lead one to think that these should be broadly classified under family affections. The question arose as to whether these muscular dystrophies were essentially progressive, and the statement was made that in every case the possibility of great improvement by systematic exercise should always be kept in mind in the early stage. Two illustrative cases were briefly reported which had been followed for many years.

Dr. C. L. Dana said that so far as the dystrophies were concerned, which were not strictly of the so-called pseudo-hypertrophic type but rather of the arm and leg type, it seemed to be a well-known fact that many of them cease to progress and patients live years in comparative comfort. He had personal knowledge of two families in which there were six or seven persons, belonging to three generations, who were afflicted with the leg or arm type of dystrophy. Some had lived to old age with only an inability to use the upper arm or perhaps the thigh muscles. One of these patients, when thirty-nine years of age, had been seen at many clinics in New York. The atrophies had begun at the age of nineteen, and had reached their height at about the age of twenty-nine. His weight had been reduced to eighty-eight pounds. A fairly hopeful prognosis could be given in this class of cases, especially when the atrophies do not begin very early in life. In Dr. Dana's experience with pseudo-muscular hypertrophy, there had been only one case in which the disease had been really checked. This person was a lady of twenty-three, in whom the trouble had begun at the age of eighteen. She had presented all of the typical symptoms of pseudo-hypertrophy of late development. He had put her upon systematic exercises, and as a result the disease had not only ceased to progress, but she had absolutely improved. In another case which had been faithfully treated by exercise and massage for four years, there had been continued progress. Dr. Dana said he would like to have Dr. Brooks explain why there should be so much fibrosis in these cases. It might be that in the death of the muscle fiber an irritant poison is formed, and that this gives rise to the increased proliferation. There was a striking difference clinically between a typical spinal atrophy and an ordinary dystrophy, and he believed these diseases were very different in their origin also. The hereditary cases were of a type which is quite distinct from that of the acquired forms.

Dr. A. Wiener said that about six years ago he had presented to the Society, a patient who was very much crippled in his muscular movements. In that case he had been so convinced that many muscular fibers were still intact that he had carefully trained him in exercises for six months. He had been again presented to the Society at the end of that time, and the improvement had certainly been very marked—indeed, the day previous he had been able to ride forty miles on his bicycle. On the other hand, in the dystrophies occurring early in life, he did not believe much could be gained by exercise.

Dr. Leszynsky exhibited photographs of two patients whom he had had under his care for a number of years, with pseudo-hypertrophy of the lower extremities, and progressive muscular atrophy of

the upper extremities. Both had died of some intercurrent disease at the age of twenty-five. Before he had seen them, both had received massage and careful training in physical exercise.

Dr. Hammond said that he had recently made a post-mortem examination upon a case of pseudo-hypertrophy, with rather interesting findings. In the lumbar enlargement of the cord, there had been found a distinct cavity extending for several inches. In the dorsal segment was a large gliomatous mass pressing upon the cord. This was apparently a lesion independent of the disease in question. He was in a position to agree entirely with Dr. Wiener, as to the beneficial effect of exercise. He had tried systematic exercise in those affected early in life, and had not found the slightest benefit from carefully conducted exercise of this kind, carried on for a considerable time.

Dr. B. Onuf said that the muscles which have to do the most work were the ones most affected; the muscles which must bear the weight of the body are the first ones to become affected. It was because of this fact that he had been led to try the effect of the opposite plan of treatment, *i.e.*, rest in bed. However, the result had been disappointing.

Dr. Collins said that the post-mortem examination referred to by Dr. Hammond, had been on a patient that had been under his own observation for over two years. This man had been twenty-four years of age at the time of his death, and the disease had existed for fourteen years. Careful investigation into the family history had shown no similar case. Up to his eleventh year he had been free from all disease. For eleven years he had been unable to walk, and for eight years had been bed-ridden. Up to a short time before death he had retained the ability to move his finger, though he could not move his arm, and his facial muscles continued to act well. It was a most typical case of progressive muscular dystrophy. Death had resulted from a tuberculous infection. The brain reported by Dr. Sachs had been from a boy under his observation for six or seven years. Assiduous attention to calisthenic exercises had made him worse in proportion to the assiduity, and that, too, although he had had an excellent calisthenic teacher. This had been Dr. Collins' experience in all other cases in which the disease had begun early in life. The changes described by Dr. Brooks, as having taken place in the ganglion cells, certainly opposed one's ideas of the relation of the neurone to disease. After five years' experience with the Nissl stain, he felt in a position to assert positively that nuclear eccentricity means absolutely nothing.

Dr. Smith Ely Jelliffe said that he had heard nothing said by Dr. Brooks about the terminal end plate of the motor nerve.

Dr. Brooks replied that after attempting to study end plates, he had come to the conclusion that this could only be done with methylene blue during life, and that he had been unable to do. He could not tell Dr. Dana why the connective tissue should grow up so much more in one place than in another. In the calves there had been an increase in volume, and in the pectoral muscles a decrease. It was not improbable that it was due to some inflammatory or toxic condition in these particular muscles, or possibly that the muscle had been over-exercised. He agreed with Dr. Collins about the uncertainty of the Nissl stain, and that the findings described by him as having been observed in the ganglion cells were negative.

Dr. Sachs closed the discussion. He admitted that the findings reported in the paper certainly did tend to shock one's confidence in the neurone theory as a whole.

CHICAGO NEUROLOGICAL SOCIETY.

January 11th, 1891.

Vice President, Dr. Hugh T. Patrick, in the chair.

Drs. D. R. Brower and H. Gideon Wells reported, and presented specimens from, a case of paralysis of the fifth to the twelfth cranial nerves of the left side of about twelve years' duration. Death was due to angina pectoris. The paralysis had reached its full extent in the course of a few months and then remained perfectly stationary. A diagnosis was made of infra-nuclear paralysis due to a growth in the dura. Because of the history of the case, coupled with the occurrence of twelve miscarriages and a slight improvement under iodides, the lesion was thought to be syphilitic. At the autopsy a tumor resembling somewhat a psammoma was found in the dura, and extended into the left petrous bone, and pressed upon the paralyzed nerves at their points of emergence from the brain. Microscopically it was found to be a vascular endothelial tumor derived from the endothelium of the perivascular lymphatics—a periendothelioma.

ACROMEGALY TREATED WITH PITUITARY BODY.

Dr. Sydney Kuh reported three cases of acromegaly treated with pituitary body. In the first case the existing headache and mental depression seemed somewhat relieved, while in the other two cases the patients were benefited to a more marked degree: headache, vertigo, general weakness, hyperidrosis and projectile vomiting ceased, and in one instance trophic disturbances in the nails of the hands showed well-marked changes for the better. In case 3 cramps in the calves of the legs appeared after the patient had been under treatment for nearly one and a half years and the woman became very much depressed mentally.

Dr. Kuh stated that he did not believe the results to be due to suggestion only. He believed that the disease of the pituitary body is the cause of acromegaly. In every case of this malady in which a *thorough* post-mortem examination was made, the gland was found to be affected not only in man but also in one case known to have occurred in an animal. There is a good deal of evidence to show that the hypophysis exerts some influence upon our physical development, and that it may not only cause acromegaly but under certain conditions the opposite condition, stunted growth.

Dr. Brower mentioned a case of acromegaly in which death was sudden. One of the main points of interest in the case was the fact that a Gowers' blood test showed 104 degrees of hemoglobin. The patient was sent to the hospital the day of examination, and died of pulmonary edema. At necropsy the pituitary body was found enlarged. In a second case, Dr. Brower gave thyroid extract and followed it by pituitary body. There was apparent subjective improvement. Death was caused by the grippe. How much of the improvement in this case was due to suggestion, was an open question.

Dr. Barker said he was much interested in Dr. Kuh's paper, and also in Dr. Brower's suggestions, as there was certainly an intimate relation between the thyroid and pituitary bodies. Dr. Barker asked Dr. Kuh whether he looked upon the treatment of acromegaly by pituitary body as a substitution method, or whether he believed acromegaly was due to a degenerative process. Dr. Kuh said treatment would indicate that a degenerative process was taking place, and that the good obtained was by substitution.

Dr. Dewey asked if any systemic change took place during treatment. Dr. Kuh replied that there was no change in pulse or temperature.

Dr. Wells pointed out the fact that hypertrophy of an organ was not necessarily followed by hypersecretion of that organ.

Dr. Patrick asked if there were any change in the visual fields. Dr. Kuh said not.

Dr. Kuh closed the discussion by saying that the solution of organo-therapy was not so easy as it might seem. The substitution theory was the one generally accepted, but he had a case of myxedema under observation which had been cured, and stayed cured for years without further use of thyroid extract. Substitution would not account for the change being permanent.

Periscope.

CLINICAL NEUROLOGY.

SURDITE CORTICALE AVEC PARALEXIE ET HALLUCINATIONS DE L'OUÏE (des kystes hydatiques du cerveau) (Cortical Deafness with Paralexia and Hallucinations of Hearing, due to Hydatid Cysts of the Brain). P. Serieux and R. Mignot (Nouvelle Iconographie de la Salpêtrière, 14 Year, No. I, Jan. Feb., 1901, p. 39).

Man 75 years old, eight years previously had for the first time an epileptiform attack. For the last two years subject to periodic convulsive crises, followed recently by psychical symptoms, lasting three or four days. On November 30, 1900, following an epileptic attack, the following train of symptoms was observed: total deafness, maniacal excitement, hallucinations of hearing and sight. The patient presents neither motor aphasia, word-blindness, nor paraphasia, in spontaneous speech. The deafness of cortical origin was accompanied by paralexia, loss of comprehension of words read to him, and disturbances of writing. The maniacal excitement and hallucinations ceased in a short time, but the cortical deafness persisted until the patient's death, three weeks after the last attack. Autopsy showed the presence of more than twenty hydatids in the cerebral hemispheres; six of which were in the temporal lobe. The cortical deafness was based upon the following conditions: the patient is completely deaf both to sounds and to spoken words, he obeys no order, and comprehends nothing spoken, though he pays attention and attempts to listen. The osseous perception is likewise abolished. The autopsy findings confirm this diagnosis, as follows: There is a cyst at the posterior extremity of the first temporal in the right hemisphere, and in the temporal region of the left hemisphere there are five, one in T^1 in the anterior half, two in T^2 middle region, and a cyst in T^3 . There exists little observation in regard to bilateral deafness due to lesions in T^1 . In those of Wernicke and Friedlander, sensory aphasia coexisted. The etiological factor in this case was the presence of hydatid cysts, recognized as such by their contents and by their walls. They were for the most part superficial in location, as is usually the case in cysts of the brain. They presented a certain degree of symmetry; the temporal lobe, the Rolandic zone and frontal pole being involved on both sides. About one-fourth of the parasites were dead. They had existed a long time before producing any symptoms.

SCHWAB.

THE DANGER OF SPINAL ANESTHESIA. J. V. Shoemaker (Journ. Am. Med. Assoc., Nov. 24, 1900).

The author in reviewing this subject, says that he has seen a single injection give rise to symptoms of respiratory failure. The procedure is also productive of pain. In order to avoid this effect, Bier and others have employed Schleich's infiltration anesthesia as a preliminary measure. In some cases chill and fever have followed the injection. Severe and long-continued headache is not uncommon. Distressing nausea and vomiting have also been excited. Exceptionally staggering gait and sharp spinal pains were experienced on the day

following the injection. In some patients profuse sweating, and in others marked debility have occurred. In certain cases anesthesia was not produced by the operation, therefore great caution in the use of this method should be exercised.

JELLIFFE.

ETUDE SUR L'OPHTHALMOPLÉGIE CONGÉNITALE (Ophthalmoplegie Complexe. (Study of Congenital Ophthalmoplegia). Cabannès and B. V. Barneff (Nouvelle Iconographie de la Salpêtrière, 13th Year. No. 6, p. 615).

From a clinical point of view congenital paralyses of the ocular muscles can be divided into, (a) Isolated paralyses; (b) associated paralyses; (c) complex paralyses. Under (a) are included congenital ptosis, congenital strabismus; under (b) combined paralysis of the levator and superior rectus, internal rectus of one side, external rectus of the other; congenital ptosis associated with abnormal movement in opening the jaw where the eyelid tends to become elevated; under (c) formed by the union of the following: ptosis, paralysis of the superior rectus, paralysis or paresis of the internal, external, or inferior recti, paralysis or paresis of the oblique (rare), with integrity of the internal eye muscles (sphincter of the pupil and ciliary muscle). These latter can be designated as complex paralyses. The case: Infant 28 months; no syphilis, or neuropathic history in parents. The child was born normal, but the eyes remained closed for fifteen days after birth, when the eyelids began to move automatically. It seemed even then that one of the eyelids was raised sooner than the other. At 19 months the parents noticed the immobility of the eyeballs. Vision was normal. At the age of 3 years the condition was found to be the same; mobility of the eyes and the lids did not appear to be improved. An analysis of the forty cases found in literature is added by the authors. The pathology of congenital ophthalmoplegia is yet unsettled on account of the rarity of postmortems on these cases. There are in the main two theories, the nervous and the muscular. The former teaches that there is a faulty development of the bulbar nuclei which preside over the motor nerves of the eye; the latter teaches that the seat of the process is in the muscles themselves. The authors believe in conclusion that a rarer form of congenital ophthalmoplegia exists of which this case is a type, and they give it the name of complex ophthalmoplegia (Ophthalmoplegie complexe).

SCHWAB.

HYPERTROPHIE OSSEUSE DANS UN CAS D'HEMIPLEGIE INFANTILE AVEC ATHETOSE-CHOREE (Bony hypertrophy in a case of infantile hemiplegia with athetosis-chorea). Lannois et Fayolle (Lyon médical, Nov. 18, 1900).

The introduction of radiography has enabled the authors to demonstrate the rare condition of bony hypertrophy in case of hemi-athetosis due to cerebral apoplexy in infancy. A case had already been reported by Lannois in 1898, because one of the breasts had undergone hypertrophy. At that time it was stated that the paretic-athetotic muscles had undergone hypertrophy. The authors' case already alluded to, together with a hemiathetotic epileptic, were selected for radiographic measurement. Both these cases had distinct muscular hypertrophy, but radiography failed to reveal any corresponding changes in the bones. In a third case of the same nature, however, not only the muscles, but the bones were hypertrophic. The wrist

of the athetotic side measured 16 cm. to 15 cm. on the sound side. Mensuration was confirmed by the radiographic test. Not only the bones of the carpus but the lower ends of the radius and ulna were distinctly enlarged. The patient had ordinary infantile cerebral hemiplegia of the face and limbs, followed by athetoso-chorea. The affection was due to hard labor and obstetrical intervention.

The authors' conclusions are: This phenomenon may possibly be due to the athetotic movements. But why then does it not always occur along with the muscular hypertrophy? Excessive use, besides, does not explain the hypertrophy of the breast in one of the cases, nor the enlargement of the testicle of the paralytic side in a case of Bourneville's. The cause must be trophic.

CLARK.

ZWEI BEMERKENSWERTHE FÄLLE VON ERKRANKUNG DER NERVEN AUS DEM PLEXUS SACROLUMBALIS (Two unusual Cases of Disease of the Sacrolumbar Plexus). F. Hartman (Jahrbücher für Psychiatrie und Neurologie, 19th Vol., 1900, p. 471).

Case I. An injury to the nerve plexus of the lower extremity by means of a stab wound through the ischiaticuu majus without other serious injury to the pelvic organs. There resulted from this a total paralysis of the left leg, with corresponding loss of sensation. The total paralysis indicated a lesion of the ischiatic, crural, and obturator nerves. In studies upon the cadaver it is apparent that the lesion must have been in the region where the roots of the ischiatic come together, that is in the sacral plexus in the region where the fibers which go to make up the ischiatic are situated. The third and fourth sacral roots escaped. The obturator in its course through the pelvis and the crural, to the linea innominata, are injured, and by the same mechanical lesion the muscle iliopsoas, the glutei and pyriform. Diagnosis: Neuritis of the ischiatic, obturator and crural nerves.

Case II. A man 50 years old, noticed for the past year a small spot on the thigh which felt dead, no pain. Shortly after this continuous pain in this region was felt, as also in the small of the back, on slight exertion. Decrease in size of the left upper leg. Cremaster reflex right lively, left absent. Gluteal reflex present. Patellar reflex right slightly increased, left absent. The extensors of the knee joint are paretic. Flexion of the hip joint weaker than normal. Abduction of the leg normal. Adduction weak. Rotation not changed. Electrical examination shows moderate R. D. In this case there is a group of symptoms which results from some injury of the territory supplied by the crural, obturator and external spermatic nerves. The seat of the disease is taken to be in the lower plexus, the first four roots being involved. Iliopsoas, sartorius, and abdominal muscles (I and II), quadriceps, adductors, pronators (III and IV), cremaster reflex (I-III), plantar reflex (II-IV), skin over pubes, anterior aspect of scrotum (II-IV), external side of the hip (II), anterior and inner side of the hip (III), inside of foot (IV). A condition of degenerative neuritis was present in this case, the possible etiological factors being diabetes and alcohol, though the strictly unilateral distribution of the process would not favor either of these assumptions.

SCHWAB.

KLINISCHE UND PATHOLOGISCH-ANATOMISCHE UNTERSUCHUNGEN ÜBER DIE UNCOMPLICIRTEN, TRAUMATISCHEN RÜCKENMARKSERKRANKUNGEN (Clinical and Anatomico-pathological Investigations on

Uncomplicated, Traumatic Spinal Cord Affections). F. Hartman (*Jahrbücher für Psychiatrie und Neurologie*, Vol. 19, 1900, p. 380).

A very careful study of this most complicated question, in an abstract only a few of the more important points can be brought out. The author bases his study upon the theory that every force which acts upon the bony framework of the central nervous system must be followed by changes in the inclosed structures. In the spinal cord, as in the brain, the symptoms following trauma must be divided into the curable and the incurable, and the pathological conditions into temporary and permanent anatomical changes. The rapid appearance and disappearance of symptoms is regarded by Kocher as typical of *commotio cerebri*. This is also the case in spinal cord trauma, but a pure *commotio spinalis* is much more difficult to find than a *commotio cerebri*. This difference is easily appreciated when the elastio completely inclosing skullcap and the segmentary structure of the spinal cord with its many bony openings are compared. In the latter a trauma can act to much better advantage.

Case I. A typical example of the much-discussed term *commotio spinalis* following a fall on the neck after which, without any severe signs of *commotio cerebri*, symptoms appeared which could only be interpreted as depending upon disturbances of the functions of the medulla and cord, the areas of distribution of these symptoms depending upon the spinal nerves arising from it. The following cases are discussed as being those of uncomplicated, direct traumatic diseases of the cord. Case I. Contusion of the spinal column, *spondylitis traumatica*, mild transverse disease of the mid-dorsal region of the cord. Case II. Contusion of the spinal column, *spondylitis traumatica*, transverse lesion of the fifth lumbar segment, with possible Brown-Sequard symptoms. Case III. Fall upon the buttocks, contusion of the spinal column, unilateral lesion of the tenth dorsal segment. Case IV. Contusion of the spinal column, partial lesion of the fifth cervical segment, with small disseminated foci in the lower cervical cord (indirect cord lesion). Case V. Contusion of the spinal column, central disease, especially of the motor territory of the eighth cervical and first dorsal segments (indirect cord lesion). Case VI. Contusion of the spinal column, partial lesion of the sixth and seventh cervical segments and their roots, severe root disease of the lumbar cord (disseminated diseased foci in the medulla spinalis without primary or secondary hemorrhages. Case VII. Contusion of the spinal column, central disease of the cord in upper portion of the spinal column, severe transverse lesion in region of the fifth cervical segment. These cases are all carefully described and the post-mortem examinations, both macro- and microscopical are carefully noted. The following are some of the clinical and pathological conclusions. We divide traumatic diseases of the cord into complicated (direct, accompanied by spinal column disease), and uncomplicated. The uncomplicated variety is divided into direct traumatic, in which the disease of the cord follows the trauma immediately, and into indirect traumatic, in which the trauma forms the starting point for the development of a chronic cord disease later. In this group the author includes *poliomyelitis anterior chronica* (Erb), *sclerosis*, *gliosis*, *sclerogliosis*, and *syringomyelia* of traumatic origin. In respect to the mechanics of the spinal cord injury we distinguish a direct and an indirect form. The latter depends upon the influence of the peculiar structure of the spinal column, and we

believe that we have found in this fact a reason for the greater frequency of traumatic diseases of the cervical cord than elsewhere. According to our opinion, we are not in a position to determine from the clinical picture of a spinal cord trauma the definite pathological process which underlies it. The primary degeneration is divided into a lymphogenous and an ischemic form. The pathological changes in the meninges are divided into hemorrhages, scar-tissue formation, shrinking and adhesive meningitis. The lymphatic apparatus into lymph infiltration, degeneration, cavity formation; vascular system into a primary and secondary hemorrhage, hyperemia, endothelial growth, change of the adventitia into embryonic tissue with regenerative function, pure periarteritis and arteritis; Glia tissue into moderate proliferation; Nervous tissue into primary mechanical destruction, lymphogenous and ischemic degeneration (primary necrosis). Root diseases and cell changes are often found at a distance from the location of the lesion.

SCHWAB.

REPERTO ANATOMO-PATOLOGICO DI UN CASO DI EPILESSIA CON MIOCLONIA (Report of Autopsy of a Case of Epilepsy with Myoclonus). Rossi and Gonzales (*Annali di Neurologia*, Vol. xviii, No. iv).

The authors refer to the three cases reported in this journal in 1899 by Verga and Gonzales, in which epilepsy and myoclonus were associated. The first case reported by these authors having died, the present writers secured the opportunity for an autopsy including histological studies. (But one or two pathological studies are on record.) The history of the patient is briefly recapitulated as follows: Carlo B., single, entered Milan Provincial Insane Asylum in 1894 when 32 years of age, for epileptic insanity, for which he had been treated on several prior occasions at the Ospedale Maggiori. The epilepsy began when the patient was seven years old. His family history was very bad; his father demented, mother eclamptic, one brother and two sisters epileptic. Toward the age of 20, patient had added to his epilepsy the phenomena of myoclonus, which became more and more frequent, and was accompanied at times by violent maniacal agitation. Upon admission, patient was seen to have notable facial asymmetry, but no other anomalies. His epileptic attacks did not exceed one a month. The phenomena of myoclonus were seen to be present in the limbs and face, especially the frontal muscles, the head being moved backward and sidewise, the shoulders suddenly elevated and depressed, the arms and legs elevated and abducted. The patient had to keep his bed on account of the danger of falling, and was unable to feed himself properly. His mental condition became worse, and from a mild disposition he developed in the last few months of life an irascibility and impetuosity, with hallucinations. The myoclonus became worse and worse, nutrition failed, finally pleurisy developed with a high degree of effusion, the patient dying in March, 1900. An autopsy was held March 27, 1900, the day after death. Dr. Verga was responsible for the macroscopic and Dr. Gonzales for the microscopic findings. External appearances: emaciated; rigor mortis only in the right lower extremity; slate colored macules on trunk (inferior external aspect of thorax). Head irregular in shape. Thorax right pleural sac filled with bloody serum. Lung on that side compressed. The left lung showed

old pleuritic adhesions. A small amount of fluid in pericardium. Heart of normal size. No evidences of atheroma of aorta or coronaries. Valves all normal. Abdomen: viscera normal. Brain: cranial bones thicker than normal; no traces of sutures; two depressions by the side of the sagittal line in front. Right half of cranium has less capacity than the left. When the dura was incised a clear serum escaped; the dura was thickened; arachnoid and pia pallid and infiltrated with serum. Pia readily came away from cortex beneath. No atheroma of Sylvian artery or other vessels. The brain substance was pale, and of normal consistency. Nothing abnormal was discovered in the nerve centers as far as the naked eye appearances are concerned. The microscopic findings are as follows: the dendrites showed a rosary-like series of swellings, varicosities. The fibers in the white substance also exhibited varicosities and atrophy. The neuroglia was in general atrophic. In the cerebellum the pigment in the nerve cells was much diminished. In the cord, the ganglionic elements exhibited a breaking up of the pigment. This chromatolysis was marked in all the cells of the medulla. The entire nervous system whether encephalon, spinal cord, peripheral nerves, etc., showed the same type of degeneration. This degeneration was based upon the anemic condition of the brain, especially in the Rolandic region and foot of the third frontal convolution on both sides, in which regions the epileptogenous zone appears to be seated.

CLARK.

EIN FALL VON TRAUMATISCHER SPÄTAPOPLEXIE (A Case of late Traumatic Apoplexy) J. Mazurkiewicz (*Jahrbücher für Psychiatrie und Neurologie*, Vol. xix, 19th Year, p. 551).

Case of a man who received a trauma from a fall. No symptoms followed immediately upon the accident. A few weeks later the patient fell again. Following this there developed headaches, somnolence, speech disturbance, paralysis. An examination made five days after the second fall showed no paresis, ataxia, or sensory disturbance. No mental involvement. The speech however was monotonous and heavy. There developed in the course of a week aphasia with, however, a complete comprehension of words, difficulty in deglutition, and gradually increasing right-sided paralysis with spastic condition of lower extremities. Under increasing stupor and inability to take nourishment, the patient died. Autopsy: Left lateral ventricle is full of blood originating from a hemorrhagic focus in the thalamus opticus, which had broken through into the ventricle. Third ventricle also contained fluid blood. Hemorrhagic focus in left side of pons. These findings are typical of late apoplexy and confirm the opinion of Michel that the site of predilection in late traumatic apoplexy is first the base of the brain, then the walls of the lateral ventricle, the aqueduct of Sylvius and the fourth ventricle. The diagnosis of this condition can be very difficult, even impossible, especially when the clinical history cannot be obtained. Tumor, abscess, encephalitis are of differential diagnostic importance. When symptoms pointing to a break into the ventricles are present a lumbar puncture may show the presence of a hemorrhagic fluid, as was found in this case.

SCHWAB.

TOXICITÉ DE LA SUEUR DES EPILEPTIQUES (Toxicity of the Sweat of Epileptics), Mairat and Ardin-Delteil (*Soc. de Biol.* Dec. 14, 1900).

These authors have recently studied the toxicity of the normal sweat and have repeated the experiments with epileptic sweat. In the first series of ten cases the epileptic sweat exhibited no difference in comparison with normal sweat, save that the digestive tube was more affected than in the latter case, while the urine was also more frequently voided. Fatalities were not more commonly produced. In a second series, however, the epileptic sweat proved fatal in every one of eight cases, and in as small amounts as 137 c. c., 151 c. c., etc. It was exceptional, however, for convulsions to develop. The autopsy findings showed much inconstancy. To explain such radical differences in results in these two groups of cases, the authors state that in the first series, the sweat used was interparoxysmal, while in the second series it was taken either at the onset of the attack or very soon afterward.

To sum up, the interparoxysmal sweat is normal sweat, and the paroxysmal sweat is toxic and lethal in action. The toxicity is soon lost after the attack. This toxic property of sweat is genuine and not due to want of isotony with the blood serum of the rabbit. For that matter, the isotony is often almost perfect. Thus freezing point of the paroxysmal sweat runs from 40 to 56, while the interparoxysmal sweat is about 40.

Referring to the prior article by these authors on the normal sweat (*Comptes Rend. Soc. de Biol.*, Nov. 23, 1900), a description for their method of collecting the sweat is given. The patient is placed in a coffin-shaped oven, his head alone being outside of the apparatus. The latter is heated by a current of hot air; the skin was previously ascepticised. The sweat during the baking process ran down into a trough whence it gravitated to a sterile collecting vessel. In some cases the authors collected as much as 800 c. cm. of sweat from a single individual.

CLARK.

UNFALL UND EPILEPSIE (Epilepsy and Accident). F. Bahr (*Monatssch. f. Unfallheilkunde*, Oct. 15, 1900).

The literature of traumatic epilepsy of peripheral origin is a meager one. Cases are confined almost wholly to the results of direct injury to the skull and brain. There is hardly anything on the subject of epilepsy as a result of peripheral wounds. In the Franco-German war, out of 77,461 wounded (not including cases which resulted fatally) there were 17 cases of traumatic reflex epilepsy. Despite this infrequency the author believes it well to call attention to the subject. He has been able to get notes of three cases in which an unmistakable connection can be shown between accident and epilepsy.

Case I. Male, aged 44; his history negative. He wrenched his right shoulder while carrying a drain pipe. The clavicle of the same side also was fractured; the whole right half of thorax was sensitive. Traumatic hemoptysis. After his injuries had healed, he complained of spells of forgetfulness, unconsciousness, vertigo, etc. About a year after the injury, he developed typical epileptic attacks. Case II. Male, aged 44; history before injury was quite negative. His accident consisted of a fall which apparently caused a contusion of the lung. He became subject to epileptic attacks. Case III. Male, aged 56; his history was negative; he had a fall from a ladder. He developed epileptic attacks which appeared to be called forth by injury to the left lower extremity.

All these cases were in middle-aged men; it is rare for epilepsy to begin after the age of 20 years. The coincidence is a much more

plausible explanation than a reflex epilepsy of traumatic peripheral origin, cases of which occur much less frequently the more carefully epilepsy is studied.

CLARK.

PATHOLOGY.

PATHOLOGY OF HERPES ZOSTER. C. Head and P. Campbell (Brain, Autumn Number, 1900).

These authors have made an extensive series of observations on the pathology of herpes zoster, founded on cases where the patient died at various periods subsequently. The acute changes found in the posterior root ganglion of the nerve supplying the affected area of the skin, consist of (1) an extensive acute inflammation with the exudation of small round deeply-staining cells; (2) extravasation of blood; (3) destruction of ganglion cells and fibers; (4) inflammation of the sheath of the ganglion. If severe, such a condition leaves a scar in that part of the ganglion affected and leads to thickening of the sheath above the affected area. On the other hand if the eruption has not been severe, all traces of the inflammation present in the acute stage may pass away, leaving the ganglion apparently normal. The changes in the posterior nerve root corresponded to the results which might have been expected from the lesion of the ganglion; they consisted of an acute degeneration followed by a greater or less amount of secondary sclerosis according to the severity of the acute destruction. The anterior root was in all cases normal. In the mixed peripheral nerves degeneration likewise occurs and can be traced right up to the fine twigs which pass into the skin to supply the area over which the eruption is distributed. The time relations, of the degeneration and subsequent sclerosis to the eruption was the same in the peripheral nerve and the posterior root. The degeneration in the posterior roots can be traced into the posterior columns of the spinal cord. Where the eruption extends on to the arm the degenerated fibers can be followed in the cord from the root zone to the postero-external column, and by this path up to the nucleus cuneatus. Where the eruption is on the leg the field of degeneration passes into the postero-median column. The posterior roots in the dorsal region, containing as they do afferent fibers from the trunk, consist mainly of short fibers which do not form a part of either the postero-internal or the postero-external columns in the cervical region of the spinal cord, but run up in the root zone adjacent to the posterior horn, get less in number as they ascend and disappear in a variable (6 to 16) number of segments. Thus the long fibers which form the postero-internal and postero-external columns in the cervical region come almost exclusively from the leg and arm respectively. Zoster of the branches of the trigeminal is associated with a similar lesion in the Gasserian ganglion to that found in the posterior root ganglia in cases of zoster of the trunk and limbs. This lesion causes secondary degeneration in the sensory root of the Gasserian ganglion both in its extra- and intra-medullary course. Zoster in all respects resembling that arising spontaneously may be produced by implication of a posterior root ganglion in inflammatory processes secondary to malignant disease, tubercle, or injury.

Sections through an unbroken vesicle of herpes zoster show a cavity, the floor of which is formed of naked papillæ which are in a condition of profound inflammation and are infiltrated with small

round cells which stain deeply. The cavity of the vesicle is filled with fluid which contains broken-down epithelial cells of all sizes and shapes, and small round cells. No sign of micro-organisms either in the vesicle or its surroundings can be found. The lymphatic glands enlarge and frequently become tender, and are found on section to be in a condition of inflammation and are free from micro-organisms. Thus there is the curious fact that a collection of inflamed vesicles containing a sterile fluid gives rise to enlargement and inflammation of the lymphatic glands which also show no sign of bacterial invasion.

Herpes zoster must be considered an acute specific disease of the nervous system, in which the febrile period lasts from three to five days. The rash may appear a few hours after the onset of the disease, or may tarry till the fall of temperature. As in the case of other specific diseases second attacks are very uncommon. An exactly analogous disease is acute anterior poliomyelitis, which similarly begins with malaise and fever lasting from three days to a week, and at a variable time during this febrile period paralysis is noted. Again, the pathological anatomy of acute anterior poliomyelitis is exactly similar to that of the posterior root ganglion in herpes zoster. Herpes zoster might justly be spoken of as acute posterior poliomyelitis. The changes in the posterior root ganglion consist of an acute interstitial inflammation accompanied by necrosis of the ganglion cells. Of the nature of the agent which is responsible for this we are completely ignorant. This agent commonly attacks one ganglion only. The ganglion most commonly affected are those which receive afferent impulses from the viscera through the white ramus of the sympathetic, and which (anatomically) contain a preponderance of the smaller type of ganglion cells that give rise to the shorter fibers of the posterior columns. These smaller cells among other functions probably subserve those of pain, for the long tracts of the posterior columns do not conduct pain impressions. Hence the intense pain which accompanies an attack of zoster. The eruption is probably produced not by disturbance of special trophic nerves, but by irritation of cells in the ganglion which subserve the function of pain, and more particularly that form of pain produced by afferent visceral impulses.

JELLIFFE.

PSYCHIATRY.

BEITRAG ZUR DEMENTIA PARALYTICA BEIM WEIBLICHEN GESCHLECHT (General Paresis in Women). Jahrmärker (Allg. Zeitschrift für Psychiatrie, 1901, lviii, 1, s. 1).

The author gives the results of his study of 54 cases of paralytic dementia in women, from the Marburg Psychiatric Clinic, and comes to the following conclusions. The proportion of female to male paralytics in the district from which his material came was about 1 to 7, figures midway between the extremes given. The number of cases of paresis is increasing, in females slightly more rapidly than in males. Women of the working classes were chiefly affected. Privation and care played a great rôle and in about one-third of the cases syphilis was pretty certain, while in a considerable number of the remaining patients, there was reason to suspect it. Hereditary predisposition was frequent. The majority of the patients were on admission between 40 and 45, the average age being 43½ years. Alteration of the menses apart from that due to age, was present in nearly all cases, but the influence of the climacteric did not appear

to have the importance attributed to it, by Krafft-Ebing and others. Potus was present in but six cases. The course of the disease did not differ from that generally described, euphoria being usually present, while excitement and expansive delusions, though not infrequent, did not reach the height common in men. The average duration of the disease was 2 years and 6 months. Earlier beginning, shorter duration and altered course of the disease was not evident in the cases studied.

ALLEN.

DE L'ANESTHÉSIE HYSTÉRIQUE (SON MÉCANISME PSYCHIQUE), (Hysterical Anesthesia—Its Psychological Mechanism). Prof. Bernheim de Nancy). (*Revue de Médecine*, 21st Year, No. 3, March 10, 1901, p. 193).

This article is an interesting discussion of hysterical anesthesia based upon the author's well-known theory, the chief elements of which are that hysterical anesthesia is purely psychical, that the sensation is perceived but is neutralized by the brain and creates what the author has called a negative illusion. The striking similarity between an anesthesia produced by hypnotic suggestions and one hysterical in character led Bernheim to accept for them a common explanation. It has been demonstrated that in hysterical anesthesia, as well as in suggested anesthesia, sensations reach the cortical nerve cells and enter into the domain of consciousness. The sensation is perceived in consciousness, nevertheless the patient shows no evidence of having perceived it and has no knowledge of it as a conscious phenomenon. This seemingly apparent paradox is explained by the assumption of an amnesia, which is superimposed upon the perception. In this way its reality is destroyed and a negative illusion is produced. In speaking of amnesia, the author says that the memory of the sensation is not abolished but it has merely disappeared from the field of consciousness, becoming subconscious or latent. The conclusions arrived at in this study are the following: 1. Hysterical anesthesia is purely psychical. Its characteristics are those of an anesthesia produced by suggestion. 2. It is much less frequent than is commonly believed. It is developed or made complete often in an artificial way, by intimation or unconscious medical suggestion. 3. It is always amenable to psycho-therapy but is often difficult to influence by reason of the auto-suggestive resistance of the subject. 4. It can have an organic origin, as a peripheral or central constriction or vasomotor paralysis, and can be retained by auto-suggestion when the vascular disturbance has disappeared. 5. The hemianesthesia of organic central origin, due to a lesion affecting the sensory tract, can remain after the lesion and be retained by auto-suggestion. 6. The sensory impressions in psychical anesthesia are perceived and are conscious ones, but the mind, influenced by the idea of anesthesia, causes an inhibition and effaces the sensation as soon as it is perceived, thus producing amnesia.

SCHWAB.

THERAPY.

LA DOSE SUFFISANTE DE BROMURE ET LE SIGNE DE LA PUPILLE DANS LE TRAITEMENT DE L'EPILEPSIE (The Sufficient Dose of Bromide and the Pupillary Sign in the Treatment of Epilepsy). Gilles de la Tourette (*La Semaine Méd.*, Oct. 3, 1900).

Believing bromides to be the best if not the only treatment for epilepsy, the author directs all his energies to studying the refinement of its administration.

In the first place, in a case of moderate severity, the patient should take bromides for 2, 2½, and even 3 years. The epileptic ought to be treated at home, under the charge of some one devoted to his interests. This attendant should take notes of all attacks, vertiges and "absences," and should also keep a record of all the medicines taken.

Inexperienced physicians have a way of interrupting the course of bromides at intervals, for fear of "producing accumulations." of bromides at intervals, for fear of "producing accumulations." should be taken during menstruation, and even during pregnancy, should that condition ever supervene. But during an attack of fever, if well marked, the medicine may be suspended for a brief interval. In common with his teacher, Charcot, the author prefers the bromide of potassium to any single remedy, but as a rule employs the tribromide mixture. R. Pot. brom. 40 gm., Sod. brom., Amon. brom., Sod. benz., aa 12 gm., Water 1000 c. c. M. He has this remedy administered in a soup spoon holding 15 c. c. or better still in a cylindrical glass so graduated as to hold one soup spoon at the upper limit of graduation. Half this quantity may be given, but there are no further subdivisions. The remedy must be given at convenient hours. When the attacks come on irregularly and cannot be definitely foretold, the daily dose of bromide mixture should be divided into two portions, for morning and evening respectively. But when the attack is expected at a certain moment, at least two-thirds of the daily dose are given, two hours before the looked-for outbreak. Nocturnal attacks belong under this head.

Benzoate of soda is used in connection with bromides as an intestinal antiseptic. After extensive deliberation the author has chosen this drug in preference to various others, because it is well tolerated by the stomach, intestines, kidneys, etc.

Fixation of the dose of bromides is of prime importance. Information as to whether or not the patient has ever taken bromides before should be determined; the state of the renal excretion should be inquired into to ascertain if the kidney will be equal to eliminating the drug. Children bear a larger dose of bromide per kilo of weight than do adults. If the dose is too small, it is insufficient to relieve; if too large it provokes intolerance. When the sufficient dose is reached it must also be maintained. Age has more to do with fixing the dose than the number of attacks. Some patients respond to the action of the bromides much more rapidly than others. The limits of tolerance should be manifested in certain ways short of intoxication. As the bromides abolish hyperexcitability, the first overaction should affect the reflexes and produce retardation. The author thinks that justice has never been done to this conception, and that certain phenomena of this sort have never even been described. The pupil of the eye in a patient who is tolerating the bromides, is moderately dilated. As the remedy is pushed the dilation is increased until finally there is a sluggishness of accommodation, and the pupil fails to contract in the presence of light. In other words, permanent dilation and sluggish reaction to light and accommodation constitute the "sign of the pupil" which proves the patient is becoming saturated with bromides. Through information furnished by this sign the author has been able to learn that certain patients were not taking their bromides as ordered, for according to the amount ordered, intolerance should have arrived. The author discusses the various phenomena of bromism. Among other symptoms he speaks of the "bromide cough," which is dry and fatiguing and not accompanied by expectoration. There is a sense of burning and irritation in the larynx due to the depressed secretory activity in which the entire bodily secretion participates.

CLARK.

ZUR BEHANDLUNG DER EPILEPSIE MIT BROMIPIN (Treatment of Epilepsy with Bromipin, 10% sol. of Bromine in Ol. Sesamum). Lorenz (Wien. klin. Wochen., Nov. 1, 1900).

Lorenz gives in detail the histories of 18 male and 16 female epileptics when under the bromipin treatment. In not a single one of these cases did there occur any unpleasant collateral action of the drug, and especially no gastro-intestinal disturbance or anorexia. During the monthly weighing of the patients a gain was the rule. Five of the 34 lost weight, 7 held their own, and all the others gained. Some of the patients took the remedy with pleasure and none with repugnance. As a rule it was given in liquid form, only a few patients taking it in capsules. Bromipin was well borne as a rule, but in a few patients it produced confusion, excitement, etc., for a short time only. In these cases bromipin was then given secretly, mixed with food. Before the bromipin treatment was actually begun, the patients were given no form of medicine whatever for a period of two weeks, in order to obtain a definite idea of the therapeutic power of the remedy. During this period, eleven of the patients had their attacks increased in number and severity. The dose of bromipin varied greatly in the individual case. In some patients the attempt was made to determine the minimum sufficient dose. In general, the daily amount varied from 10 to 20 gm. equal to from 1.75 gm. to 3.50 gm. of sodium bromide. The available dose in the author's experience varies from 20 gm. to 30 gm., equal to 3.5-5.25 gm. bromide sodium. Thirteen patients showed a distinct improvement over previous results during the entire period of treatment. One patient showed an actual increase in the number of his attacks. The other patients showed no improvement over other methods of treatment. In three cases major attacks remained unchanged, while the attacks of petit mal were increased in number. The improvement in the general condition, was on a par with that obtained in the epileptic state. The bromic acne caused by former treatment disappeared completely under the bromipin in five cases, while in sixteen others a decided improvement was apparent. Having previously made a trial of the Flechsigs method, the author is able to state positively that bromipin gives much better results.

CLARK.

Notes and News.

A BILL has been introduced into the Florida Legislature asking for a repeal of the recently-enacted insanity divorce law.

DR. CARL LAUFENAUER, Professor of Psychiatry in the University of Buda Pest, has just died at the age of sixty-five.

DR. CHARLES W. PAGE, Superintendent of the Connecticut Hospital for the Insane, at Middletown, Connecticut, has resigned.

DR. H. C. RUTTER, Manager and Superintendent of the Ohio Hospital for Epileptics at Gallopolis, O., has resigned and taken up private practice at Columbus, O.

DR. PEARCE BAILY, of New York, has been appointed a member of the Board of Managers of the Craig Colony for Epileptics, in place of Dr. Frederick Peterson, resigned.

DR. MILES D. BAKER has been appointed first assistant at the Illinois Southern Hospital for the Insane at Anna, and Dr. David R. Sanders, Jonesboro, physician to the Annex.

DR. W. A. STOKER, formerly Superintendent of the Southern Hospital for the Insane at Anna, Ill., has been appointed Superintendent of the Indiana Southern Hospital at Evansville, Ind.

PROFESSOR HYSPOLYTE GOSSE, of Geneva, has just died. He was appointed to the chair of Forensic Medicine in the University of Geneva in 1875, which position he retained until the day of his death.

THE NEW MEDICAL LABORATORIES of the University of Pennsylvania are to be unexcelled in arrangement and equipment. One of the buildings will contain laboratories devoted to comparative, neurological and surgical pathology.

A NEW JOURNAL OF MENTAL SCIENCE, entitled *The Journal of Mental Pathology*, edited by Dr. Louise G. Robinovitch, of New York, has just made its appearance. A number of distinguished neurologists in this country and abroad are staff contributors.

DR. J. B. LEARNED, of Northampton, Mass., has offered a prize of \$100 for the best essay upon some method of inducing sleep in insomnia without the use of drugs. Representative men of scientific medicine are to be judges of the competition.

THE STATE COMMISSION OF LUNACY has approved of plans for a new group of buildings at the Rochester State Hospital, to cost about \$230,000. These buildings will afford accommodation for about 500 additional patients, thus doubling the present capacity of the institution.

CAMILLO GOLGI, Professor of General Pathology in the Univer-

sity of Pavia, has been unanimously invited by the medical faculty of the University of Turin, to fill Dr. Bizzozero's vacant chair. His work in histology of the nervous system, his reputation as Bizzozero's most distinguished pupil, were high recommendations for the position.

IN JAPAN in 1883, the last year of the old system of diet, there were 1236 cases of beri-beri out of a force of 5,346 men in the navy, or a ratio of 231 per 1,000 of force; the deaths from the disease being 49. In 1898 16 out of a total of 18,426 men were affected, the mortality being but one. A revised dietary has practically driven beri-beri out of the Japanese navy.

DR. LIVINGSTON S. HINCKLEY resigned the Superintendency of the Essex County Hospital for the Insane in Newark, New Jersey, to enter upon private practice in Newark, and Dr. Daniel M. Diel, formerly Chairman of the Committee on Hospitals of the Board of Freeholders of Essex County, N. J., has been appointed in his place.

MINNESOTA claims very restricted facilities for the care of her epileptics. Apart from 145 patients in the hospitals for the insane, and 167 in the school for feeble-minded at Faribault, no provision is made for this class of sufferers. Arrangements have been made for the separate care of 150 epileptics at the Faribault school.

The seventh annual report of the Craig Colony for Epileptics at Sonyea, New York, shows that 845 patients have been admitted to this institution since its opening on February 1, 1896, of which number 612 remain. With the completion of buildings now under construction, the Colony will have a capacity of 840 beds. The economical and industrial features of the Colony plan in the care and treatment of this class are described at careful length, and an earnest plea is made for additional facilities to care for the large class of applicants still waiting admission. A special report embracing clinical and pathological work of the Colony staff is in preparation.

A NEW BUILDING which will accommodate about 450 additional patients has just been opened at the New Jersey State Hospital for the Insane at Morris Plains. This building also contains extensive and thoroughly equipped laboratories for neurological research.

THE BOARD OF MANAGERS of the State Hospital for the Insane at St. Joseph, Mo., have requested funds for the accommodation of the tuberculous insane and other infectious diseases, and a reception or psychopathic hospital for the insane.

THE SUPERINTENDENT of the Eastern Indiana Hospital for the Insane, states that 25% of the mortality among its inmates is due to tuberculosis. All the acute and curable insane of the hospital district are under treatment, a condition not before known in the history of State care of the Insane in Indiana. It is proposed to make future extension of the institution upon the cottage or colony system.

THE BILL appropriating \$250,000 for the construction of an institution to be managed exclusively by homeopaths, has been reported favorably in the Pennsylvania Legislature.

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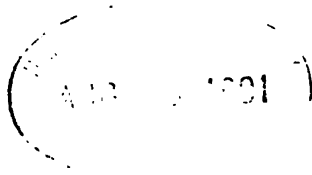
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TABLE OF CONTENTS ON PAGE ii and iv

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ii

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Original Articles.

A CASE OF PERIPHERAL PSEUDO-TABES WITH EXAGGERATED REFLEXES. AUTOPSY AND MICROSCOPICAL EXAMINATION SHOWING DEGENERATION OF THE PERIPHERAL NERVES AND NO LESIONS OF THE SPINAL CORD.*

By CHARLES K. MILLS, M.D.

The term pseudo-tabes has been applied to a variety of spinal and neural affections with symptoms closely simulating those of true tabes spinalis—to forms of spinal meningitis, or meningo-myelitis chiefly affecting the dorsal aspects of the cord, or involving the dorsal roots; to neuritis or degeneration of the nerve trunks, or the nerve endings in skin or muscle. The symptoms in these cases of pseudo-tabes simulate closely or incompletely those of true tabes. The syndrome usually includes all, or a majority, of such symptoms as neuralgic or lightning pains, anesthetics, incoördination, bladder disturbances and lost knee-jerks, and if the sciatic distribution is affected, lost Achilles jerk. More or less marked atrophy may also be present. In a majority of cases the disease can be traced to some toxemia or infection, as to alcohol, ar-

*Paper read before the American Neurological Association, Boston, June, 1901.

senic, lead, diabetes, or syphilis. The clinical diagnosis between these different affections and true tabes is made by a close study of etiology, of previous history, and of the progress of the case, and is much helped by attention to a few symptoms which are usually absent in the one case and present in the other. The iritic reflexes, for instance, are not commonly affected in pseudo-tabetic cases, and in these cases also bladder symptoms may not play so important a rôle. The pains in the pseudo-tabetic are not always of the same character as those in true tabes. One symptom, lost knee-jerk, is commonly present in all types of cases, at least when the lower extremities and the parts of the nervous system related to them are affected. If it were not for this fact some of the cases would bear almost as strong a resemblance to ataxic paraplegia or combined sclerosis as to dorsal tabes. In a case observed by me in the Philadelphia Hospital, and of which a condensed report follows, the symptoms present were such as to incline me to regard the case either as one of ataxic paraplegia or of irregular or incomplete tabes (incomplete in the clinical sense), the term irregular tabes being used here to designate those cases in which the symptoms point to disease both of the dorsal and lateral columns, the lesions however predominating in the former. True tabetic phenomena such as shooting pains and ataxia were present, but the patient had also exaggerated knee-jerks and other phenomena which seemed to point to implication of the lateral columns, or at least of the pyramidal tracts. During the short time that the patient was under observation the case would most probably have been regarded by others, as it was by me, as one of irregular tabes or of the form of ataxic paraplegia in which tabetic phenomena predominate. I had the opportunity of making an autopsy in this case, and Dr. William G. Spiller has carefully examined microscopically the spinal cord, specimens of peripheral nerves, and of muscle, with the unexpected result of finding that the spinal roots at all levels and the cord at all levels, except some of the cell-bodies of the ventral horns, were free from disease, but marked degeneration was present in the most distal por-

tions of the nerve trunks and in the small nerve bundles within the muscles examined. Some degenerative changes in the muscles were also present. Following is the report of the case:—

J. M., 75 years old, was admitted to the Philadelphia Hospital in 1897, having had good health until twelve years before this time, when he began to have attacks of pain in the back which he attributed to cold, wet and over-exertion. Six years before admission to the hospital he began to show weakness in his right leg, which increased, the left also becoming affected. Two years later ataxia of station became prominent, and a year later he had to use a cane in walking, and at about the same time dull aching and at times shooting pains in the legs occurred. Later, but at a time not exactly recorded, he had trouble in holding his urine. Special notes of his condition were made in June, 1898. Tactile and pain senses were normal; temperature sense uncertain, especially at tops of feet and outsides of thighs. Station and gait showed incoördination. The upper as well as the lower extremities were markedly ataxic. The knee-jerks were plus; patellar clonus absent; ankle-clonus absent; biceps-jerk and jaw-jerk, plantar, cremasteric and abdominal reflexes present. The patient made no complaints of paresthesia of the feet or other parts. Additional examination and notes were made in May, 1899, which practically agreed with those above recorded except that the ataxia had become more marked in both legs and arms; the left pupil responded to light, accommodation and convergence; the right pupil did not react to light, and but poorly to accommodation and convergence. The following notes were made July 10, 1899. The patient is a rather poorly-nourished man of average height; his face is dull and stupid; tongue is coated and protrudes without tremor; eyes are half closed most of the time; extra-ocular movement fairly good. The left pupil reacts to light, in accommodation and convergence; the right pupil has little or no reaction. The musculature of the extremities is fairly well preserved, no wasting being detected; both legs and arms incline to a condition of spasticity. Station was markedly ataxic, the patient tending to fall unless supported; his gait also was ataxic. His arms were ataxic, with spastic rigidity. The grip was fairly good in both hands. Knee-jerks were plus; quadriceps-jerks present; patellar-clonus and ankle-clonus, cremasteric and plantar reflexes absent; biceps-jerks plus; Sinkler's toe-jerk present. The patient's mental condi-

tion precluded any satisfactory examination as to sensation, but tactile and pain senses seemed to be retarded in both legs. The patient died August 31, 1899, the physical signs and investigations made some time previous to death showing probable nephritis with cardiac degeneration, valvular disease and eventual pulmonary edema.

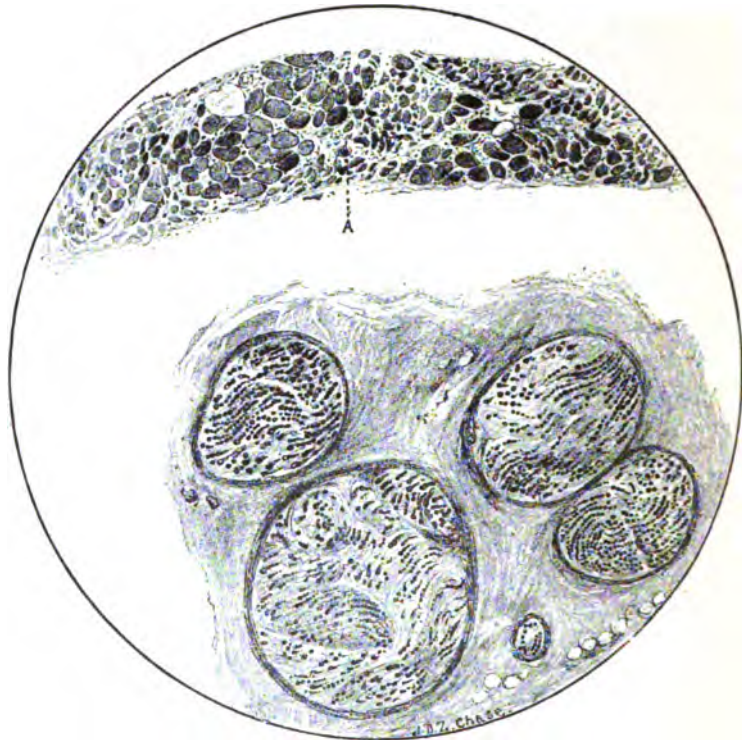


Fig. I. The upper drawing represents degenerated muscle from the sole of the left foot. A, group of degenerated muscular fibers. The lower drawing represents degenerated nerve fibers from the sole of the left foot.

Dr. Wm. G. Spiller reports as follows regarding his findings in the case: The spinal cord in the cervical, thoracic, and lumbar regions is almost normal. Some of the small vessels of the pia have walls of hyaline appearance when stained with carmine, and occasionally a slight round-cell infiltration about

the vessels may be found within the spinal cord, but these are unimportant findings and do not explain the symptoms. The nerve cell-bodies of the anterior horns in the cervical and lumbar regions are not fully normal, as in some the chromophilic elements in the center of the cell-body have become granular, and in some the nuclei are displaced. Many of the cell-bodies are deeply pigmented, but the alteration of the nerve cell-bodies on the whole is not very intense. The ventral and dorsal roots everywhere are normal. Marchi preparations of sections from the lumbar region reveal nothing abnormal. Sections from the left sciatic nerve appear to be normal. The left internal plantar nerve is much degenerated, and muscle from the sole of the left foot contains many bundles of atrophied muscular fibers. The nerve bundles within the muscular tissue are also much degenerated. The case is one of degeneration of the peripheral ends of nerve fibers with some degeneration of the muscles.

A STUDY OF THE INSANITIES OF ADOLESCENCE.¹

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In two periods of residence at the Philadelphia Hospital—the first beginning in the spring of 1896—about 2,000 male insane patients came under my observation, of which number nearly 400 were between 15 and 30 years of age on admission; and I have chosen, somewhat arbitrarily, for this paper, the cases within these age limits.

It seemed best to leave out of this list, however, those cases which were admitted before the days of improved history-taking introduced by the Physician-in-chief, D. E. Hughes; and so I have actually on my list 344 of these young men.

Of this number again, 43 were epileptics, 12 were imbeciles, 4 paretics, and one a case of acute delirium. Omitting these we have to consider the cases of 284 young men whose histories and symptoms compose the accompanying table (No. I.). Their ages are shown in Chart I.

It will be seen by this table that a personal history of alcoholism was obtained in 44 cases; yet most of these were probably moderate drinkers, and few showed the clinical picture of any of the ordinary alcoholic insanities (see Table II, and Chart II.). Indeed, the vulnerability to alcohol in these patients was striking, and often called to mind the well-known teaching that intolerance of cerebral-excitants is a trait of the degenerate. What relations have the doctrines of degeneration with our present subject? Esquirol recognized the tendency of hereditary insanities to appear at puberty and in adolescence; and Morel, more definitely pointed out that at this period degeneration reveals itself.

In 192 cases of my series, reasonably full histories were obtained, and a summary of them shows insanity, grave ner-

¹Read before the Philadelphia Neurological Society, December 17, 1900.

TABLE NO. I.
284 CASES ALL PATIENTS NOT PLAINLY IMBROILLE, EPILEPTIC, OR PARETIC

FAMILY			PATERNAL SIDE			MOTHER'S SIDE			BROTHER			SISTER			PERSONAL HISTORY		SYMPTOMS		CAUSES OF DEATH	
Insanity	55	24	28	7	8	Alcoholism	44	Excited	153	Arson	8	Phthisis	25							
Paresis	1	1	0	0	0	Head Injury	9	Depressed	112	Retus. Food	18	Enterocolitis	4							
Nerv. Dis.	14	6	4	0	4	Chorea in Child- hood	2	Confused	19	Sex. Pervers.	4	Nephritis	1							
Epilepsy	19	4	5	6	4	Insanity in Child- hood	2	Halluc. Hearing	88	Hysteria	3	Heart (Valv.)	1							
Apoplexy	16	5	9	1	1	Insanity in Child- hood	4	Halluc. Sight	31	Epileptiform at- tack	1	Bas. Meningit.	1							
Alcoholism	41	34	7	0	0	Night - terrors in Childhood	1	Halluc. Smell	6	Apoplectiform at- tack	7	Exhaustion (of mania)	1							
Phthisis	35	19	18	6	2		1	Delus. Persec.	105											
Pneumonia	12	7	5	0	0		1	Delus. Exaltat.	49											
Bright's	14	10	4	0	0		1	Both together	25											
Rheumatism	5	1	4	0	0	Bright's	2	Religious	25	All cases			344							
Cancer	3	0	3	0	0	Typhoid	2	Erotic	26	Epileptics			43							
Lead Poison- ing	4	4	0	0	0	Typhus	1	Catalepsy	31	Imbeciles			12							
						Diabetes	1	Verbigeration	6	Paretics			4							
						Chlorosis	1	Echolalia	5	Acute Delir.			1							
						Cervical Pott's	1	Delus. Hypoch.	16	Remainder			284							
Histories in						Loc. Ataxia	1	Imper. Concep.	1	Family History of Insanity in nearly one- third										
Negative						Secondary Syph.	1	Morbid Fear	1	Family History of Neuropathy in nearly one-half.										
No history						Gonorrheal Rheu- matism	1	Impulsion	9	Family History of Degeneration in more than three-fourths.										
						Grippe	9	Mal. du doute	5	Number of cases admitted from August 15, 1898, to August 15, 1899			67							
						Typhoid	7	Deficient	16	Number of these discharged			24							
						Cerebral Syphilis	1	Homicidal	27	or 36 per cent.										
							1	Suicidal	25											
								Left home												

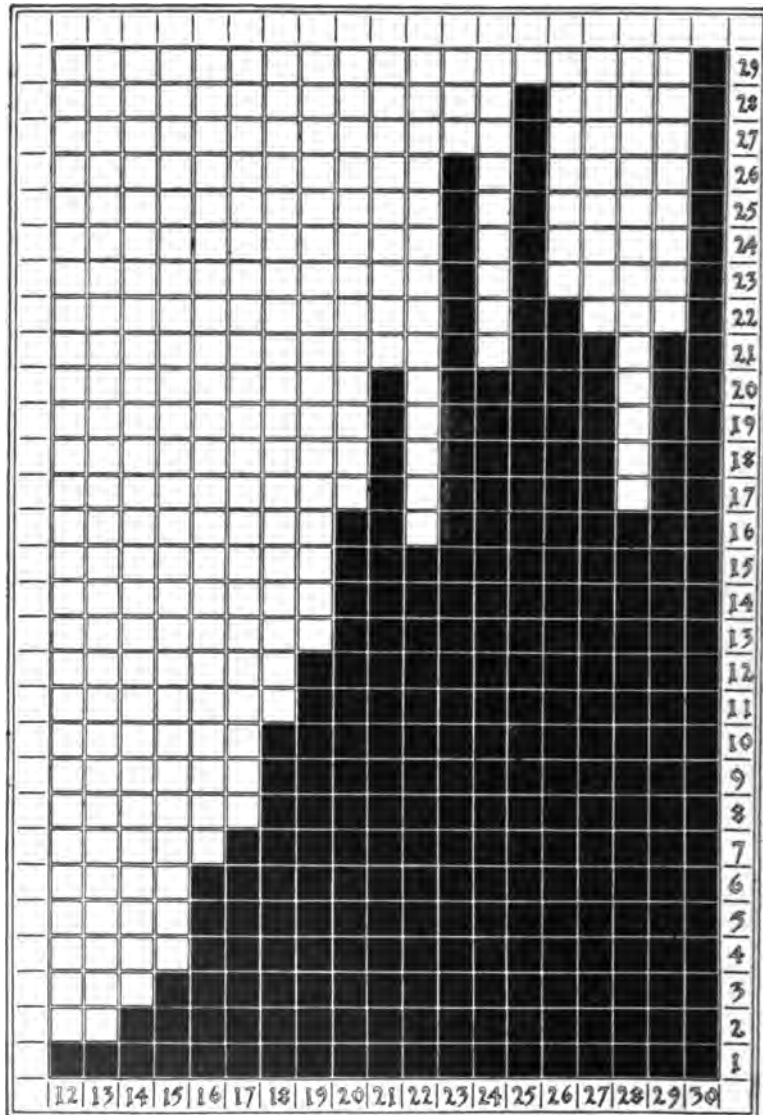


Chart No. I. 284 cases, comprising all patients between 15 and 30 years of age on admission, who were not plainly imbecile, epileptic or paretic.

The figures at the bottom represent the ages; those at the side, the number of cases.

TABLE No. II.
44 PATIENTS WITH ALCOHOLIC HISTORY

FAMILY	PERSONAL HISTORY				SYMPTOMS	CAUSES OF DEATH
	TOTAL	FATHER'S SIDE	MOTHER'S SIDE	SISTER		
Insanity	6	3	3	0	3 Excited	0
Paresis	1	1	0	0	1 Depressed	17 Heart (Valv.)
Nerv. Disease	0	0	0	0	1 Confused	17 Enterocolitis
Epilepsy	3	0	1	2	1 Halluc. Hearing	4 Phthisis
Apoplexy	0	0	0	0	24 Halluc. Sight	3
Alcoholism	6	5	1	0	7 Arson	1
Phthisis	5	2	2	0	0 Refus. Food	1
Pneumonia	1	1	0	0	23 Sex. Pervers.	0
Bright's	2	1	1	0	5 Hysteria	0
Rheumatism	0	0	0	0	3 Epilept. Attack	0
Cancer	1	1	0	0	4 Apoplect. Attack	2
Lead Poison-	0	0	0	0	3 Tremor Facial	0
ing	0	0	0	0	7 Muscles	3
Negative -7	7	0	0	0	0 Marital Infidelity	4
					0 "Recurrent"	7
					2 Delus. Hypochon.	
					2 Imper. Concept.	
					0 Morbid Fear	
					0 Impulsion	
					0 Aboulia	
					0 Mal. du doute	

vous disease, phthisis or other diseases commonly regarded as degenerative in the families of more than three-fourths—a high percentage for the Philadelphia Hospital, where it is harder to obtain correct family histories than in the institutions over which our distinguished seniors, Dr. Chapin and Dr. Chase, preside. Doubtless, many of these young men were degenerates; in addition to this bad heredity, various anatomical marks of it were common, but unfortunately we made no systematic study of them.

As students of Magnan we may point to the obsessions—much more frequent than our table shows—embracing in them part of the hypochondriacs who were more obsessed

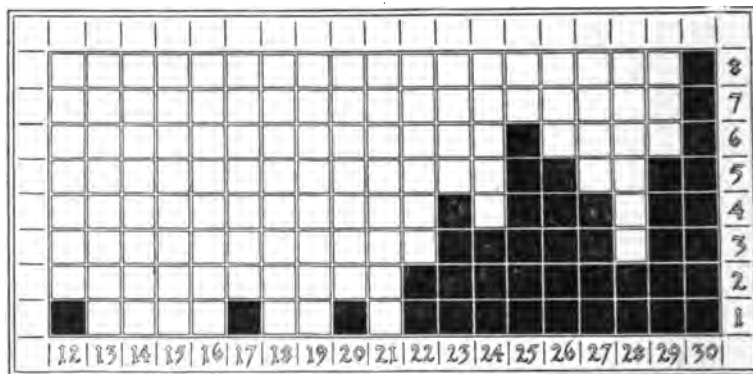


Chart No. II. Patients with history of alcoholism, 44 in number. The figures at the bottom represent the ages; those at the side, the number of cases.

than melancholy, and we may say, "Here are the 'psychic stigmata of degeneration.'" We may dwell upon the frequency of erotic and religious delusions and of sexual perversion, upon the rapidity of onset and decline of delusional excitement in many cases, upon the multiformity of delusions often seen and their bizarre character, upon the speedy dementia which closes the histories of so many of these unfortunates; and we may conclude that many of them, perhaps most, are degenerates. But as to obsessions—these psychic stigmata—are they not rather actual insanities, disorders of will, as Regis has it, on a basis of neurasthenia? Coming and

going with the state of nervous health they are stigmata only as insanity itself is a stigma: to serve as a real test of degeneracy, a stigma must be permanent. And as to the other clinical symptoms mentioned, they suggest degeneration, but as Toulouse wisely remarks, "To construct this nosological group out of clinical characters is begging the question."

It would seem that only by close anatomical study on a large scale with classification of stigmata, can degeneration obtain a useful clinical significance. The theory of degeneration is useful if we keep it simple, and think of it mainly as related to heredity. That was Morel's idea of degeneration, let us cleave to that; for when, following the later French writers, we attempt to use it as a basis of classification and say that mania, melancholia, circular insanity and chronic delusional are *not* degenerative psychoses while the others are, we begin to lose faith in the whole matter.

Nor does it help any to widen Morel's conception and include, as Bouchereau, Ballet and others have done, a great number of *acquired* degenerative causes, for then the delirium of typhoid fever becomes the archetype of an acute degenerative psychosis, and general paralysis a type of chronic degenerative psychosis. It may be that, as Toulouse holds, the degenerate with typhoid is more prone to mental disturbance from his fever; or that, as D. E. Hughes believes, the degenerate with syphilis is more liable to paresis than is one not degenerate; but in these instances the degeneration which is most significant for us is not the cloudy swelling in the one case, nor the parasyphilitic change in the other, but a more intimate and hitherto entirely elusive alteration which is merely disclosed—not caused—by chance poisons, as those of infectious disease. It is important not to confuse these two uses of the word "degeneration"—one being proper to psychiatry, the other to pathological anatomy. Probably, as Morel said, "Insanity is in most cases a state of degeneration;" or rather, as Joffroy puts it, "to be insane, the patient must be degenerate."

We come then to the old question: How shall we classify our cases? Wille, in his excellent book on the "Insanities

of the Puberty-age," divides his cases in the old way into what Magnan calls the "simple elements of insanity"—mania, melancholia, circular insanity and so on, and concludes that there is no insanity peculiar to puberty, but only "puberty-modified" insanity.

When we read Wille's book we feel that the author regards mania, melancholia, etc., as fundamental in the way that the simple elements in chemistry are fundamental, or the bones and ligaments in anatomy. This is right in teaching, but in the philosophic study of psychiatry it is wrong; and so when Morselli—to whom psychiatry owes as much as to any single author—when Morselli tells us that hypochondriasis is a "distinct clinical entity," we point to a row of cases ranging from downright melancholia to pure obsession—all hypochondriacs—and doubt the correctness of this statement; so when the Germans insist upon acute paranoia we answer that clinically acute paranoia helps us little. There is no boundary we admit, between mania and paranoia, but the prognosis in the border-land cases is that of mania or of paranoia according as excitement or delusion dominates the picture. There is no prognosis of acute paranoia *per se*.

And prognosis should be our guide. It is only through its prognosis that general paralysis has become the one unquestioned clinical form; and it was on this basis that Kahlbaum first proposed katatonia as a clinical type—a basis which is, to use his words, "the possibility of constructing the subsequent course of the disease and its further development, not only as to life and health, but in individual cases also to predict the manifold phases of the clinical picture."

From the standpoint of prognosis, then, what are the "puberty-modifications" of insanity? We may safely say, in the first place, a tendency to dementia. It seems to have been in this very connection that Morel first used the term precocious dementia (*démence précoce*). The theory is, as Charles K. Mills states it, that with many individuals the potentiality of life, mentally, is early exhausted. Of the cases in my series less than one-fourth left the hospital restored, and many of these "restored cases" probably continued "psychic crip-

ples." On the average two-thirds of the insane men at the Philadelphia Hospital between 15 and 30 years of age become chronic demented or die of intercurrent disease. Clinically this is an all-important fact, justifying in itself a separate consideration of the insanities of puberty; and when we apply clinical tests we apply the only tests that hitherto have borne fruit in psychiatry. With Kraepelin, then, we may claim special consideration for many of our cases, on the clinical ground of prognosis:—*Dementia Præcox*.

To make this ground sure for our study I have selected from my series 58 cases (Tables III., IV., and V., and Chart III.), in which a clear family and personal history was obtained; in which there was no suspicion of alcoholism or other adventitious or diathetic cause for insanity, and in which hopeless dementia came on rapidly—many being at present in the actual *Blödsinn* of the Germans—and I have tabulated these cases by themselves.

Following still the clinical method which was indicated for this group of cases by Kahlbaum, who said to "group by the most frequently-occurring symptom," we light upon two important symptoms; first, delusion, second catalepsy.

Paranoiac-delusional phases of a fantastic sort are exceedingly common, almost the rule, in these cases; suggestions of catalepsy, too, are common, but in some cases the delusions or the catalepsy so dominate the clinical-picture that I have, following the Germans, separated them under the heads of dementia paranoides and dementia katatonica. I am aware that katatonia is not even mentioned in such recent text-books on insanity as Ballet's among the French, or Berkley's in our own country; and nothing but real conviction of its importance has led me to present again this well-worn "katatonia-question."

Some time ago I was escorting Dr. Chalmers Da Costa through the insane wards at the Philadelphia Hospital when he exclaimed, "Do you believe in katatonia?" at the same time stepping up to a patient who had been in the hospital but a few weeks, and who was not by any means completely cataleptic. What Dr. Da Costa recognised in him was, I think, the *katatonic manner*, which is distinctive.

TABLE No. III.

BELONGING TO SERIES OF 58 DEMENTS
KATATONIA, II CASES

	FATHER	MOTHER	BROTHER	SISTER	PERSONAL HISTORY	SYMPTOMS		CAUSES OF DEATH
Insanity	3			1	Head Injury	1 Halluc. Hearing	3 Homicidal	3 Phthisis
Nerv. Dis.	0	1			Typhoid (?)	2 Halluc. Sight	0 Suicidal	2 Entero-Colit.
Epilepsy			1			Halluc. Smell	0 Left Home	2
Apoplexy		1				Delus. Persec.	5 Arson	0
Alcohol		1	2			Delus. Exalta.	0 Refus. Food	2
Phthisis		1				Both together	0 Sex. Pervers.	0
Pneumonia				1		Religious	1	0
Bright's	0					Erotic	1	
Rheumatism	0					Catalept.	11	
Cancer	0					Verbig.	2	
Lead Pois.	0	1				Echolalia	3	
						Delus. Hypo.	0	
						Impuls.	2	
Negative	3					Mal. du doute	1	

TABLE No. IV.
 BELONGING TO SERIES OF 58 DEMENTS
 PARANOIA 17 CASES

	FATHER	MOTHER	BROTHER	SISTER	PERSONAL HISTORY	SYMPTOMS		CAUSES OF DEATH	
Insanity	1	3		2	Head Injury	Halluc. Hearing	7	4	1
Nerv. Dis.		1	1	1	Grippe (?)	Halluc. Sight	5	3	
Epilepsy		1	1			Halluc. Smell	0	1	
Apoplexy		1	1			Delus. Persec.	1	1	
Alcohol		2				Delus. Exalta.	4	3	
Phthisis		1	1			Both	15		
Pneumonia						Religious	4		
Bright's	0	1				Erotic	4		
Rheumatism		1				Catalept.	9		
Cancer	0					Verbig.	0		
Lead Pois.	0					Echolalia	0		
Negative	4					Delus. Hypo.	1		

TABLE NO. V.
 BELONGING TO SERIES OF 58 DEMENTS
 HEBERPRENIA, 80 CASES

	FATHER	MOTHER	BROTHER	SISTER	PERSONAL HISTORY	SYMPTOMS		CAUSES OF DEATH
Insanity	1	6			Head Injury	1	Mal. du doute	0 Phthisis
Nerv. Dis.	2	1			Typhoid(?)	2	Homicidal	11
Epilepsy			1		Grippe	1	Suicidal	4
Apoplexy	1	1			Night Terrors in childhood	1	Left Home	6
Alcohol	5				"Brain - trouble"	1	Arson	1
Phthisis	2	4			at 7 years	1	Refus. Food	1
Pneumonia	2	2			Screaming spells in childhood	1	Sex. Pervers.	1
Bright's						1		
Rheumatism						2		
Cancer						7		
Lead Pois.						0		
Negative	5					0		
						0		
						0		
						2		
						1		

The classic picture drawn by Kahlbaum has been little altered in the twenty-six years that have elapsed since it first appeared; the bent body, the stiffened arms and legs, the wrinkled brow and downcast eyes, the stubborn silence and negativism, the wasting and the vasomotor disturbance, the stereotyped ways of doing things, with verbigeration, the isolated convulsions, and the unforeseen, sudden impulses to violence.

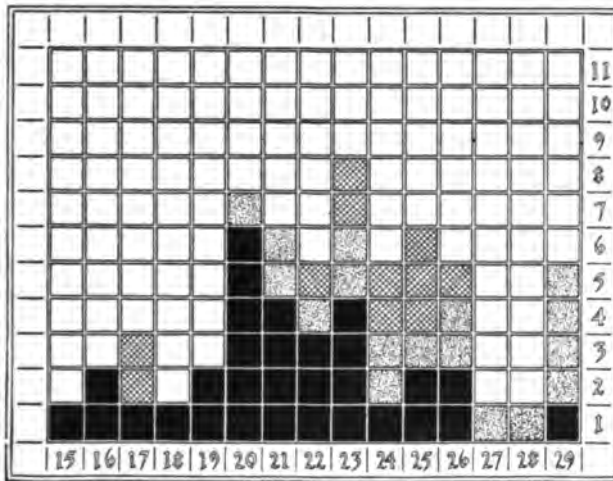


Chart No. III. 58 dements. Varieties indicated as follows: Katatonia by cross-hatching; paranoia by stippling; hebephrenia by solid black. The figures at the bottom represent the ages; those at the side, the number of cases.

Brosius alone has improved it at one point. The katatonic excitement, Brosius said, is not as Kahlbaum believed, a simple mania; the *Ideenflucht*, the changing ideas, the lively mood of true mania, are absent. The katatonic mania is a monotonous flow of words and phrases, often repeated; the manner is dramatic or pathetic, and bodily restlessness is not marked.

It seems likely that katatonia has lost advocates through a too rigid definition copied from Kahlbaum's original article. This definition does mention the cycle of melancholia, mania, stupor, confusion, and dementia, with "spasm" (cata-

lepsy); but this is misleading without some light from the text of the monograph—"an especially pathetic manner with a stiff body-posture in a melancholy patient," says the author, "is almost sufficient for the diagnosis."

Perhaps a false impression is made, too, by the bad prognosis given by later German writers. To Kahlbaum the prognosis was in many cases good, and that is certainly true. In this regard a parallel may be drawn between the katatonic and the paranoiac states at this period of life, each being of serious import according as its specific traits are deeply impressed upon the case; in the milder forms of each, recovery is possible.

Perhaps the parallel goes deeper than this, and katatonia is at bottom a peculiar psycho-motor reaction to persecutory delusions, as the exalted delusion in paranoia is a psychic reaction to such delusions. Kahlbaum remarked that katatonics are generally of a "soft temperament, quiet and gentle," an observation which holds true for our patients. Schüle says there is a "hysterical" ground in them, evidently meaning hysterical in a broad general sense. In our cases persecutory delusions were common, a persecutory mood, so to speak, was always present.

On these postulates, a theory might be based that: given a persecutory delusion in an adolescent, the patient will react to it in the form of egoistic delusion or in the form of katatonia, according as his temperament is egoistic and assertive, or soft and hysterical. It will be noticed in Chart III that the paranoiacs are rather older than the rest, an observation which coincides with one recorded years ago by Bevan Lewis, who, speaking of the insanities of adolescence, says "the delusional cases are older than merely maniacal ones." This fact may be made to harmonize with our theory by assuming that age braces the hysterical temperament and increases the assertiveness of the individual; so that one who at sixteen sinks into catalepsy under a burden of imagined troubles, would, if he had escaped until he reached the age of thirty, have risen above his persecutions in the form of egoistic delusions, solely on account of the change in temperament wrought by mature age.

Such a conception would explain the frequent coincidence of katatonic and paranoiac manifestations in the same patient, which was noted by Kahlbaum, and has been dwelt upon by Kiernan, Spitzka and many others since; such cases representing two reactions to the persecutory delusion—one psychic (egoistic delusion), the other psycho-motor (katatonia). This conception helps to explain the gravity of catalepsy as well; for if its basis be always persecutory, then it must always be psychic, catalepsy being the outward sign of profound mental impressions. Schüle's idea that it is sometimes purely motor is hard to reconcile with clinical facts.

In the series of cases marked by egoistic delusion there is a considerable variety of types, ranging from those which border on acute mania, to those which are almost worthy to be classed as typical paranoia. Most of them belong to Magnan's group of systematized delusion of the degenerate, and some to that indefinite form of Sander: "paranoia originaria," which is only a chip from the block of degeneration which the French have been hewing for two generations; a few would be called by certain authors "acute paranoia;" others are examples of what Kraepelin formerly called "Phantastische Paranoia." But they have these characters in common: more or less abrupt appearance—often with maniacal excitement—of pronounced delusions, which are rapidly and irregularly evolved, are polymorphous,—often suggesting paretic dementia and belying the old term monomania (for example, patient No. 66 claimed to be the champion prize-fighter of the world, an admiral, a lawyer, an actor, a doctor); silliness and want of consistency in conduct; mysticism and eroticism; remissions, which do not occur in typical paranoia; above all, dementia, which shows itself from the beginning of the trouble. By these characters then, but chiefly by the last, we may reunite the scattered forms of paranoia, some of which have only a historic value—calling the group, after Kraepelin, dementia paranoides.

It is the irony of fate, that hebephrenia, the first described of all the types of adolescent insanity, should be now, perhaps, the least definite of them. To put the truth bluntly,

hebephrenia today includes those cases of dementia præcox which are not distinctly paranoiac, and not katatonic; it is a group of the unclassified members of dementia præcox. The word means, of course, "the mind of puberty;" but for the most part they have nothing to do with puberty; even in Hecker's original article, which contains nearly all that is known regarding this type, the cases described are between 18 and 22 years of age. If with Scholz we include cases up to 35 years, the word has still less significance. However it has a historic importance, and some term is needed to embrace those cases marked by the characters which Hecker enumerated; namely, the shallow melancholy, varied by periods of silly liveliness and Quixotic violence; the persecutory delusions with hallucinations of hearing; the snickering and laughter without cause; the vagabondage, "leaving home" being rather prominent in our table; the petty crimes—a very large number having reached the Philadelphia Hospital through the police department; the sophomoric style of speech and writing; the confusion; finally dementia. We might add the obsessions.

Hecker took pains to exclude circular insanity (*vesania typica*), and katatonia from his type of hebephrenia; yet a careful reading of his article will discover many symptoms which nowadays would be called paranoiac and even katatonic.

After all, it may be that the common sense plan is that followed by Dr. Dercum in his teaching at the Jefferson College—to divide the insanities into the conventional forms of mania, melancholia, etc., then to approach the subject from a second standpoint, discussing the cases in their relation to periods of life—childhood, puberty, adolescence, the menopause, and senility. To omit all reference to the peculiar types of adolescence seems like rejecting our birthright—a heritage of the labors of master workmen in the field of psychiatry.

A LARGE SUBCORTICAL TUMOR OF THE OCCIPITAL
LOBE, PRODUCING RIGHT-SIDED HEMIPARESIS
AND RIGHT HOMONYMOUS HEMIANOPSIA, TO-
GETHER WITH WERNICKE'S PUPILLARY IN-
ACTION SIGN AS A DISTANCE SYMPTOM.

BY F. X. DERCUM, M.D.

H. B., boy, about twelve years of age; colored. Examined November 14, 1900, with Dr. Melvin Franklin.

Family history: Father died of tuberculosis. Mother is healthy. Patient has two younger brothers and one sister who are all healthy. Mother had two still-born children subsequent to the birth of the patient.

Personal history: Was rather delicate as a baby. Did not learn to talk as rapidly as the other children, but talked very well before the beginning of the present illness. Was a very bright child. When two years of age had whooping-cough and cholera infantum. Later had chicken-pox. Five years ago he suffered from an attack of measles. Two years ago he suffered from an attack of diphtheria.

Three years ago, that is one year before he had the attack of diphtheria, he had early one morning a sudden attack during which he lost for a few minutes the power of speech and the power of movement in the right hand. Dr. Franklin, who was called, saw him twenty minutes after the attack came on, but by this time the symptoms had entirely disappeared. He was mentally perfectly clear and nothing was noticed subsequently until the fall of 1899. He began to complain of his eyes and also of headache. His vision was corrected by glasses, but the headache was not relieved. The headaches continued until the spring of 1900. In the fall of 1899, it was noticed by his teacher that his hand-writing was deteriorating and that he was doing his work badly. Since that time it has been noticed that his right hand was becoming weak and that in dressing or feeding himself he had increasing difficulty in the use of the right hand and arm. A little later it was noticed that he began to limp in his walk; he slightly dragged the right foot. It was also noticed that he did not speak as plainly as before.

Present condition: Station with eyes closed reveals no unusual sway. Stands well upon his left leg alone but with considerable difficulty upon the right leg. In walking he distinctly drags the right leg. The right arm is carried in a semiflexed position, the left arm hangs in the normal manner. The movements of the left arm are in every way nor-

mal. The movements of the right are feeble and not well co-ordinated. The arm is raised above the head with some difficulty. Flexion and extension of the right forearm are performed in a jerky manner. Is unable to fully extend the fingers of the right hand. Examination of the right arm also reveals it to be slightly spastic. There is slight resistance to passive movements. No resistance whatever is present in the left arm. The grip of the left hand registers 30 with the dynamometer; that of the right hand only 22. Distinct drooping of the right angle of the mouth is also noted. Asked to show the teeth, the left angle of the mouth is retracted normally, the right angle of the mouth but slightly. There are no anomalies of the upper half of the face nor of the muscles of the eyes. There is evidently present a paresis of the lower half of the right side of the face. The left knee-jerk is absent; the right knee-jerk is plus. However, there is no spasticity of the right leg as compared with the right arm. The tendon reactions are present in the left arm but they are feeble; in the right arm the tendon reactions are present and exaggerated. There are nowhere present any sensory losses. The right forearm and hand are cold as compared with the other extremities or with the trunk. No aphasia is present. The patient has perfect command of words, but does not pronounce them very distinctly. He understands everything that is said to him, he is able to read both written and printed words and sentences and can also write, though the writing, because of the paresis of the right hand, is irregular. There is no astereognosis. Mentally the child is perfectly lucid but complains of headache and is emotional and tearful. There is no involvement of the sphincters. There has been no history of vomiting or of vertigo.

The eyes were examined by Dr. Samuel J. Gittelsohn. "The pupils are very much dilated, about five mm. in diameter. React rather sluggishly to strong light and respond very feebly to accommodation. The discs look somewhat paler in temporal side. Around the larger blood vessels, coming out of the disc on the temporal side, are visible very broad white lines, as if due to proliferation of connective tissue. Around the smaller terminal arteries are visible a few fine hemorrhages, and in one spot in the right eye is present a hemorrhage five mm. in circumference. The terminal arteries present a slightly beaded condition, phlebotaxis; this is not seen about the larger vessels. No optic neuritis can be detected. There was present also a right homonymous hemianopsia. Wernicke's symptom was sought for but was not found."

The diagnosis of a brain tumor, situated in the left occipital lobe and probably subcortical, was made. No opinion was ventured as to its nature, though the patient was placed upon full doses of the iodide of potassium and mercurial inunctions.

Re-examination, on December 7, 1900, with Dr. Franklin. It is found that there is now present decided ataxia in the movements, not only of the right arm, but also of the right leg. There is also present a slight hypesthesia of the entire right side of the trunk, right arm and right leg. This hypesthesia appears to be more pronounced over the right forearm and hand. It is, however, merely a hypesthesia and not an anesthesia. The existence of right-sided homonymous hemianopsia was again confirmed and in addition at this examination, the presence of Wernicke's symptom was repeatedly demonstrated.

Because of the undoubted presence of Wernicke's reaction at this examination, the diagnosis of a deep subcortical brain tumor in the left occipital lobe was made.

Re-examination on December 12. It is found that there is now present a marked general weakness. The boy no longer suffers from headache but has persistent insomnia. The right arm and leg are somewhat weaker than before and very much more ataxic. Otherwise there is no change in the symptoms. Owing to the general condition of the boy, the examination was not prolonged.

He finally died on December 20, 1900, under the care of Dr. Franklin. Death was not preceded by convulsions, but merely by an increase in the general weakness, by gradual mental impairment, and several hours before death by unconsciousness. An autopsy was made on the following day by Dr. Franklin and Dr. Daniel J. McCarthy.

As soon as the calvarium was removed, it was noticed that the brain bulged considerably in the left occipital region as though it had been under pressure. When the brain was removed, a large hard mass could be distinctly felt lying deeply within the occipital lobe. It could be easily made out there through the lateral and mesial surfaces. The brain was subsequently hardened in formalin and the exact situation of the tumor ascertained by horizontal sections through the left hemisphere. There was found a hard yellowish-white tumor, oblong and irregular in outline, 1.2 cm. below the lateral surface, 3 cm. from the apex of the occipital lobe, from 1.4 to 3.5 cm. below the mesial surface and 3.5 cm. from the basal surface. It was 7.4 cm. in its antero-posterior or longest diameter and 3.5 cm. in its greatest width. From its situation it

had evidently destroyed the fibers of the optic radiation. It did not, however, involve the optic thalamus or the quadrigeminal bodies. Its proximity, however, to these structures was such that they were probably influenced by pressure, and it is extremely probable that the Wernicke's symptom observed upon one occasion in this case was a pressure symptom. The fact that it had not been observed at an earlier examination is, of course, of significance in this respect. The hemihypesthesia and hemiparesis of the right side were evidently due to slight involvement and pressure upon the posterior limb of the internal capsule.

A microscopical examination of the tumor by Dr. McCarthy revealed it to be a tuberculoma.

A CASE OF ASTEREOGNOSIS RESULTING FROM INJURY
OF THE BRAIN IN THE SUPERIOR PARIETAL
REGION.¹

BY

WILLIAM H. TELLER, M.D.,

AND

F. X. DERCUM, M.D.

Surgical memoranda: J. J., *act* 20 years, was admitted to the Jewish Hospital on the morning of the 23rd of November, 1900, with the history that he had been struck by a baseball bat on the 16th of November, becoming unconscious, in which condition he was at the time of admission to the hospital. On examination there was found a small cut above the right eyebrow, and on the skull one-half an inch behind the fissure of Rolando and three-quarters of an inch from the longitudinal fissure (on the posterior perpendicular line through the intraparietal fissure) a depressed area was felt. There was complete paralysis of right leg, right arm, right side of face and tongue, and upward and outward deviation of eyeballs. Pulse ranged from 50 to 110, temperature 97.1-5 to 100.1-5° F. Patient was etherised, a horseshoe incision was made, the periosteum was dissected up, and a piece of bone two inches in diameter was raised (whole portion of bone being depressed); the membranes of the brain were intact. No pulsation being felt, the membranes were incised exposing a clot of blood, which was removed; the clot was black in color and extended to the depth of about two inches into the brain substance. About a half teaspoonful of brain substance came out with the clot. A drainage tube was inserted, the membranes brought together with catgut, and periosteum and skin brought together with silk-worm gut. Blood and some little brain tissue drained until the sixth day, when the tube was removed and gauze inserted, the remainder of the wound healing by first intention. The patient came out of the ether in the evening, becoming conscious within twenty-four hours. The facial paralysis disappeared, and on the thirteenth day after the operation he was able to move his arm, and forty-eight hours later he was able to move his leg. Since this time power has gradually improved. On examination of the eyes twenty-eight days after operation, there were no ophthalmoscopic changes, merely slight insufficiency of the internal rectus of the right eye.

Neurological memoranda: Gait slightly hemiplegic; he

¹Patient presented at the April meeting of the Philadelphia Neurological Society.

swings right leg a little in walking, but walks comparatively well. With Romberg test the sway is markedly increased, a little more marked to the right than to the left. There is marked uncertainty and ataxia of movement of the right arm. The patient stands well upon the left leg alone, but stands with great difficulty upon the



The stripe indicates the position of the fissure of Rolando; the circle the edges of the opening in the cranium and the area of brain injury.

right leg alone, and sways markedly to and fro. Decided ataxia is present in the right leg. R. K. J. slightly plus but leg extremely flaccid. L. K. J. very minus. Decided hypesthesia is present on the right half of the face, right half of the trunk and right arm and leg. Right plantar reflex almost absent. A faint extension of the great toe is however observed after repeated irritation of the plantar surface. Left plantar reflex is normal. No contraction of the visual fields has occurred. The tongue is protruded in the median line.

With eyes closed the patient fails to recognize any object placed in the right hand. The objects used were spool, thimble, ring, ball, cubical block of wood and penknife. Slight hypesthesia to pin points, loss of the spacing sense, loss of

the sense of location, hypalgesia and diminution of the pressure sense in the right wrist, hand and especially the fingers are observed. The perception of heat and cold is preserved, save that the responses are somewhat slow and the acuteness of perception slightly diminished. The knowledge of the position of the fingers in the right hand is also greatly impaired. Astereognosis is complete.

In the left superior parietal region an extensive depression is found, the outlines of which are indicated in the accompanying photograph. The oblique line, immediately in front of the irregular opening, indicates the position of the fissure of Rolando. This case is extremely interesting, because the brain tissue was evidently injured in the region of the superior parietal lobule, especially in the region posterior to the motor area. Indeed, the conditions present in this case are almost such as could have been desired in an experimental research in cortical localization. The lesion appears to have involved the motor region but little as the resulting terminal hemiplegia is exceedingly slight. The astereognosis on the other hand is the most striking feature of the case.

NEW YORK NEUROLOGICAL SOCIETY.

April 2, 1901.

The President, Dr. Joseph Collins, in the chair.

RECURRENT OCULOMOTOR PALSY.

Dr. William M. Leszynsky presented a woman, twenty-nine years of age, whom he had first seen four months ago. When six years old she had begun to have attacks of headache confined to the right temporal and supraorbital regions, and invariably accompanied by vomiting. The attacks occurred every five or six weeks. At her twelfth year the customary paroxysm had been associated with ptosis of the right eye, from which she had recovered in two weeks, the migraine continuing to recur as before. The second attack of oculomotor paralysis had occurred in her nineteenth year, with the same pain and vomiting. There were partial ptosis, diplopia and inability to look upward with the right eye. She had improved in three weeks, but the eye did not move upward as well as before for a few months, and then there was complete recovery of motility. The third attack had occurred in her twenty-second year, and had been characterized by almost complete ptosis, outward deviation of the eye, and diplopia. She had been obliged to keep the eye covered for three months, but had recovered in about a year. The fourth attack had been two and a half years ago, and the fifth only three weeks ago. She now complained of the eye turning outward, and of her inability to look upward. The periodical headaches bore no relation to menstruation. Examination showed slight drooping of the right upper eyelid, paralysis of the superior rectus, and paresis of the inferior and internal recti. The right pupil is 5 mm. in diameter and rigid, while the left measures 3.5 mm. and reacts normally. Vision is normal in both eyes, and the fields and fundi are normal. She is anemic and neurasthenic. The family history was unimportant, and her ocular condition had practically remained unchanged since the first examination. The speaker said that the most interesting features were the comparative rarity of this type of oculomotor palsy and its pathology. Only two authentic cases of recurrent oculomotor palsy had been studied post-mortem, one by Richter, in 1887, and the other by Karplus, in 1895. In the former, a fibrochondroma existed in the course of the nerve trunk at the base of the skull, and separated but did not destroy the nerve fibers. In the other case, there was a neurofibroma of the

motor oculi at the base. In many of the reported cases complete recovery had taken place, but in others the paralysis had gradually increased during the intervals, and had ultimately become permanent. Dr. Leszynsky said that he had seen four other cases. In the first, there had been complete paralysis of the third nerve with a clear history of accompanying migraine. Recovery had been spontaneous.

Dr. B. Sachs said that these cases were extremely rare, though he had been fortunate enough to see two in the past six months. One had been in a boy of four years who within a year had had two distinct attacks of oculomotor paralysis of one eye. He had recovered in a few months from the first attack. The family history was entirely negative. He understood that improvement had followed the second attack. There had been apparently no migraine here.

Dr. Leonard Weber said that he had presented a case of this kind to the Society twelve or more years ago. The man had oculomotor palsy on the right side. He had watched the case for a number of years. After about two years there had been only a little ptosis remaining. After a course of iodide the man had greatly improved, and had ultimately died of pulmonary tuberculosis.

Dr. B. Onuf said that he had presented such a case to the Society one year ago. The patient had since been given iodide of potassium in increasing doses, and had moved to the country. The attacks had become shorter and less severe. He did not believe that there was always a lesion of the oculomotor alone. His own case was undoubtedly one of migraine.

Dr. Leszynsky said that a very novel theory had been brought forward regarding this paralysis occurring in connection with migraine. It had been assumed that there is an increased vascularity of the hemisphere during the attack of migraine, causing a disturbance of the function of the third nerve.

A CASE OF MALIGNANT TUMOR OF THE SHOULDER PERFORATING THE SPINAL CANAL.

Dr. Leonard Weber read this report, and presented the specimen. The subject was a man of thirty-one whom he had first seen in 1891. He had presented the usual symptoms of a recent syphilis, and had been treated for this with improvement. In 1894 he had returned because of a perichondritis of the cartilaginous portion of the nasal septum. At this time a small moveable tumor, the size of a cherry, was observed in the right shoulder. This was supposed to be gummatous. The tumor diminished under mixed treatment, but a small nodule remained. In June, 1900, the man had sought relief because of a hard, solid and almost immovable tumor of the shoulder, which he said had developed shortly after a blow on the shoulder received one year previously. No benefit had resulted from rapidly increasing doses of iodide or from the biniodide of mercury. Three months later a portion of the growth was submitted to microscopical examina-

tion, with the result that it was declared by two pathologists to be a round-cell sarcoma. An effort had then been made to remove the growth, but this had been found impracticable. Injections of arsenite of soda and carbolic acid had been given for a time, but without benefit. On December 3 he had been admitted to St. Mark's Hospital because of a suddenly developed paraplegia. Bed-sores soon formed and sepsis developed, and he died on February 11, 1901, from exhaustion. The tumor and a portion of the spinal cord were removed post-mortem. The tumor was found to lead into the spinal canal. The cord symptoms in this case were due to hemorrhage and degenerative myelitis. Dr. Weber thought that the little tumor first felt in the shoulder was specific, and added that the case emphasised the desirability of removing apparently innocent tumors at an early stage.

A CASE OF CEREBELLAR APOPLEXY WITH AUTOPSY.

Dr. Weber also made this report. The patient was a man, twenty-nine years old, living amid the most unsanitary surroundings. The urine had a specific gravity of 1024, and contained a slight trace of albumin and some hyaline and granular casts. There was no history of syphilis. He had been sick for about two months before coming under observation on September 11. There was constant headache, but no sensory or motor disturbances. The diagnosis seemed to lie between tumor, hemorrhage and abscess of the cerebellum. On account of the length of time that he had been sick abscess seemed to be more probable than hemorrhage. He died in a few days, and at the autopsy the entire venous system was found engorged with blood. There was marked hypertrophy of the left side of the heart; no endarteritis of the arch of the aorta; both kidneys were slightly enlarged, the cortex showing proliferation of connective tissue in patches, and presenting the gross appearance of interstitial nephritis. No opportunity was given for microscopical examination. In the substance of the right cerebellar hemisphere was an accumulation of both recent and old coagula, and the apoplectic focus had ruptured into the fourth ventricle. Dr. Weber had seen one case of cerebellar apoplexy in a girl of twenty-five years, who had an unsuspected and untreated syphilis.

A TUMOR OF THE OPTIC THALAMUS.

Dr. Joseph Fraenkel presented this specimen, which had been taken from a person whom he had shown to the Society

in January, 1898. At that time the boy had had the cardinal symptoms of brain tumor, and a paralysis of the face which was very marked when there was any emotional disturbance. There had been no hemianopsia. The boy had been discharged from the Montefiore Home, and had done fairly well for two years and a half. When readmitted, there had been very nearly the same symptoms as before, and in addition a much more marked unsteadiness of gait and a disposition to fall to the right side. Dr. Fraenkel said that he had been led to think it possible that the tumor was after all situated in the cerebellum. On removing the brain at autopsy, a very old cyst was found in the fourth ventricle, the exact nature of which had not yet been determined. There was also a large tumor occupying the right optic thalamus.

SPINAL CORD SHOWING RESULT OF FRACTURE DISLOCATION OF THE CERVICAL SPINE.

Dr. Edward D. Fisher reported this case and presented the specimen. The patient was an acrobat, twenty years of age. While turning a somersault from the shoulders of a companion he had fallen a distance of about five feet and struck on his head. He was instantly paralyzed. When seen by the speaker that evening there had been complete anesthesia from below the nipple extending down the arms to the armpit, and on the inner side of the arm and forearm, and taking in the ring and little fingers. There was complete loss of motion and paralysis of the bladder and rectum. The reflexes, superficial and deep, had been completely lost. Permission could not be obtained for operation until three days later, and in the meantime there had been a temperature range of 104° to 105° F. The operation had been done by Dr. B. F. Curtis under cocain anesthesia, and the laminæ of the fifth, sixth and seventh vertebræ removed. No evidence of injury to the cord could be discovered. The man died three days later. The autopsy had revealed a fracture of the body of the seventh vertebra, no subdural hemorrhage, marked softening of the cord at the seventh cervical segment. There was very little gray matter left in the cord at that level, and there was very little evidence of hemorrhage into the cord proper. A very prominent symptom had been the extreme pain experienced along the course of the nerves. The classical distribution of the paralysis and the complete loss of the reflexes were interesting features.

Dr. B. Sachs remarked that twenty years ago it had been pointed out that a very significant symptom of tumor of the optic thalamus was this peculiar facial palsy made visible by emotion.

Dr. Leszynsky said that he had seen recently a case of dislocation in the dorsal region with loss of reflexes and paralysis below the seat of injury. An operation had been done, but death had followed. The autopsy had revealed a complete transverse destruction of the cord.

Dr. Fraenkel said that some time ago he had presented a paper to the Society on this matter of the reflexes, and had continued to give a good deal of attention to this subject. He would assert that the skin reflexes are not lost in total destruction of the cross section of the cord, and the relation of the tendon reflexes to the skin reflexes should enable one to decide whether or not the cord has been completely destroyed in this manner. When the compression of the cord was sufficiently great to interfere functionally with conduction upward and downward, the tendon reflexes were lost while the plantar reflexes were exaggerated. When, however, there was structural disease of the entire cross section of the cord, the plantar reflexes were also lost. This he considered a valuable point in the differential diagnosis. He had reported two cases with autopsies in which there had been loss of reflexes without total abolition of the conduction in the cord.

Dr. Leszynsky said that in the case he had just referred to all forms of reflexes had been abolished, both superficial and deep.

Dr. Fisher said that both the superficial and deep reflexes had been absent in his case, and it was because of this that he had inferred that there was complete destruction of the cord. The operation had been undertaken to relieve the intense pain.

BRAIN FROM A CASE OF EPILEPSY OPERATED UPON.

Dr. H. L. Winter exhibited this specimen, which had been taken from a child of seven years. All of the head measurements were small; there was no paralysis of any of the muscles. The child was imbecile and had epileptoid seizures which appeared to be general. Dr. Stewart had operated upon the child at Bellevue Hospital. On reaching the brain a large cyst cavity had been found in the left hemisphere. The child died seven days later with a high temperature. The hemisphere was found to have been nearly destroyed by the cyst, and the convolutions were not well marked. The interesting feature was the almost complete destruction of the hemisphere without any paralysis. The fibers of the medulla were found not to decussate as freely as usual.

ABSCESS OF THE BRAIN.

Dr. Joseph Collins presented this specimen. It had been impossible to make a localizing diagnosis. The patient was a man, twenty-seven years of age, a tailor by occupation. Two weeks before admission he had been suddenly seized with severe and more or less paroxysmal headache distributed over the

whole head. The pain was almost intolerable for six days, and then he became dizzy and had projectile vomiting without nausea. There had been some whistling sound in the right ear. When seen by the speaker, four days after coming into the hospital, there was double choked disk, but no hemianopsia. There was no leucocytosis, although the hemoglobin percentage was 36. Apparently there was no impairment of hearing. The knee-jerks were normal. There was no evidence of palsy or of spasm in any part of the body, and no symptoms referable to the special senses. The patient died four days later of exhaustion. The autopsy revealed an abscess situated in the right hemisphere, and involving particularly the posterior end of the inferior parietal lobe and of the superior parietal lobe. The cuneus itself was partly implicated. The tit-like extremity of the cuneus, it should be noted, was entirely intact on the side of the abscess cavity, and if the optic radiations were not cut across, it would not be difficult to explain the absence of hemianopsia. A diagnosis had been made of abscess of the right superior parietal convolution.

PHILADELPHIA NEUROLOGICAL SOCIETY.

February 25, 1901.

The President, Dr. James Tyson, in the chair.

Dr. F. X. Dercum and Dr. W. H. Teller presented a case of astereognosis resulting from injury of the brain in the superior parietal region.

Drs. Walton and Paul, of Boston, by invitation read a paper on stereognosis.

Dr. F. X. Dercum said that the Society was to be congratulated on having presented to it this lucid exposition of the subject of astereognosis. The parallel drawn between this condition and sensory and motor aphasia, he considered a very happy one. He thought that the view of Dr. Walton that there was an area in the cortex where the various sensations which go to the recognition of an object are combined, was probably correct.

Dr. Charles W. Burr thought that it was wrong to speak of the stereognostic sense. Stereognosis is not a sense; it is a form of judgment. He thought that the term stereognostic faculty would be the better one.

With reference to the word astereognosis, he thought that it would be better to speak of stereognosis, as the alpha belongs to the latter half of the word. He referred to a case he had seen, that of a man aged 25 years, who at the age of five years had a fracture of the skull followed by hemiplegia, from which he entirely recovered. When he came under observation there was no sign of motor palsy, no disturbance of the reflexes, and no interference with sensation; yet he was unable to name any object placed in his hand. Dr. Burr thought this case proved that there may be loss of the faculty of recognition of an object by contact without any loss of sensation.

A second case was that of a woman who was also mind blind. She came to the hospital and stated that she could not see. On examination, the ophthalmologist found that she could see objects but could not recognize them. There was no disturbance of spontaneous speech. She could feel touch, heat, cold and pain; yet when an object was put in her hand she was unable to say what it was, and did not recognise it. She later developed symptoms of diffuse brain disease, and at the autopsy the lesions were so diffuse that the beginning of the trouble could not be determined.

Dr. Burr believed that just as there is a part of the occipital lobe in which are stored up memories of things seen, so there is a part of the brain in which are stored up memories of things felt, and this part he believed was in the posterior parietal lobe behind the motor cortex. There are some grounds for this belief. In almost every case in which the inability to recognise objects has been dependent upon brain disease, there has been either a history of injury to the skull in the parietal region, or there has been found distinct disease in the parietal lobe behind the motor cortex.

Dr. James Hendrie Lloyd thought that in attempting an analysis of this subject we should begin by recognizing the fact that there are certain elementary properties of the nerve cell on the sensory side of the problem, which we generally speak of as the pain, tactile and thermal senses. These elementary properties are proba-

bly inherent to every sensory nerve cell. In the lower forms of life, we have every reason to believe that they are all present. When we come to the higher animal forms in which there is elaborated a complex psychical life, we have a much more complex matter to deal with. We have here the activity of the brain cortex and we must recognise certain psychological problems more complex than those of the sensations of pain, heat and cold. He considered that it required quite an elaborated psychological perception to determine the qualities of an object, such as its size, shape and location in space, and he could not conceive that among the lower forms of life there could be any such conception. When we come to the higher forms of life these conceptions are not only present but are essential.

This is, therefore, a physiological and psychological as well as a pathological question. Looking at it from the practical standpoint of pathology, we have pretty good grounds for knowing the course in the spinal cord for these elementary qualities of sensation, such as pain, tactile and thermal sense. We know that they run in different tracts through the cord. These facts have been proved in certain cases by pathological conditions which he had himself demonstrated in some of his own cases.

When, however, we come to lesions of the cortex or of the cerebral hemisphere, then we come into the region where there is necessarily present knowledge or judgment.

He referred to a rare form of aphasia which he had seen some years ago. The woman could not name an object which was presented to her sight, but if the object were placed in her hand she would name it instantly. In this case there was evidently a breaking up of the fibers that proceeded to her speech center by way of the visual sense, but the fibers that approached by way of the tactile or stereognostic sense remained intact.

In the case reported by Drs. Mills and Keen, Dr. Lloyd had made an independent diagnosis of a tumor in the superior parietal lobule. He based this diagnosis on the fact that there was here, a peculiar form of incoördination due to a sort of astereognosis which was practically identical with what he had seen in a previous case in his wards at Blockley, shown by autopsy to be due to lesion in the superior parietal lobule. He did not mean to assert that the superior parietal lobule was the seat of all astereognostic symptoms, but he had seen a number of cases in which astereognosis associated with a form of incoördination had been associated with lesion of the superior parietal lobule. The case of Drs. Mills and Keen had been to him of extraordinary interest, because it was a practical pathological demonstration of some of these rather fine distinctions.

Dr. William G. Spiller remarked that the term stereognostic perception had been proposed in place of stereognostic sense. It has been supposed that no case of organic disease with loss of stereognosis and without disturbance of sensation is on record. The cases referred to in the paper by Drs. Walton and Paul, and in this discussion, however, would seem to be cases of this character. Dr. Spiller had studied a case in which stereognosis was completely lost without disturbance of cutaneous sensation, but careful examination revealed some impairment of the sense of position.

It would be exceedingly important, if it were possible, to determine the representation in the cortex of different forms of sensation. In the spinal cord the different forms of sensation are probably represented in different tracts. The evidence in regard to this subject is based partly on cases of Brown-Séquard paralysis. The so-called

muscular sense is probably located in the posterior columns. There is doubt as to the location of the tactile fibers, whether they are in the posterior or in the lateral columns. In a case of syringomyelia reported by Dr. Dercum and himself, the cavity had extended throughout one posterior horn, but tactile sense was preserved. It is doubtful whether the lemniscus contains all of the sensory fibers. The lemniscus is composed chiefly of the posterior column fibers, and probably terminates in the optic thalamus. It is possible, but not demonstrated, that in the cortex the various forms of sensation are dissociated, and we have suspected for some time that the so-called muscular sense is probably represented in the parietal lobe. The location of tactile, pain and thermal senses in the cortex is not definitely known. Much more work is needed before we can accept any sharply limited cortical location for these senses.

There may be an analogy between the cortical location of sensation and that of speech. Just as there is a speech zone, comprising the back part of the first temporal convolution, the angular gyrus and the area of Broca, and injury of any part of this zone causes aphasia with a preponderance of symptoms according to the part injured; so there may be a zone of sensation. He was not prepared to accept the view that there is a stereognostic zone confined to the posterior part of the superior parietal lobe, and that injury of only this cortical area causes astereognosis. As he did not accept a concept center for speech, confined to a very small area of the cortex, but believed that the whole speech area was a concept center; so the whole sensory area might be regarded as a stereognostic area.

Dr. F. X. Dercum said that he had no doubt that all parts of the cortex play a rôle in the recognition of objects. If the object is a complex one, all the sensory faculties are called into play, and even the frontal lobes may take part, but he felt certain that there is an area which for practical purposes we can call the stereognostic area a lesion of which will give rise to astereognosis.

Dr. Spiller remarked that he had referred only to the sensory area, as stereognosis has to do with the recognition of objects by contact.

CHICAGO NEUROLOGICAL SOCIETY.

February 28, 1901.

The President, Dr. Hugh T. Patrick, in the chair.

CASE OF RAYNAUD'S DISEASE.

This case was presented by Dr. H. N. Moyer. He said that this was the third case of the affection he had seen, and they all presented marked differences.

His first patient was a man aged 35 years, who had had the disease for eight years. It began in a small spot upon the inner side of the left leg, which was painful, turned white, later became red, then black, and finally sloughed out, leaving an ulcer which healed slowly. These patches occurred at intervals upon the legs, and later the tips of the toes were involved with a characteristic gangrenous patch at the pulps which sloughed away. The patient had one hand decidedly more affected than the other, and at the wrist on that side no pulse could be felt. A very faint radial pulse could be distinguished in the other hand.

His second patient was a man 40 years of age, whose disease came on quite suddenly and involved the entire right hand. He was a machinist by occupation, working at a lathe, and in his work he was compelled to strike the lever of the machine with slight force at quite regular intervals. He attributed the trouble to this use of his hand. In this hand also, there was no radial pulse. The application of hot water would bring on a spasm of the vessels of the entire hand, which was acutely painful. The hand would present a waxy pallor. These attacks gradually became more painful and were finally followed by an ulceration of one finger, after which the disease seemed to disappear, the patient for several months having had no trace of it.

The third case was seen in consultation with Dr. S. L. Zeltner, who gives the following history: The patient was 13 years of age, of Norwegian descent, tall, has light complexion, mentally bright, very fond of reading, of an emotional nature, and has had several hysterical attacks. She has had nearly all the ordinary children's diseases. The family history is not specially significant. The mother is of nervous temperament. She has four brothers living and in good health. It is stated that her grandmother had a finger that used to turn white for a short time.

She first came under observation February 9, 1901, at which time several fingers were white and painful, but one

more so than the others. While under observation, the fingers became red, again turned white, and then assumed a bluish tint, changing color constantly. The hands were cold but sensation was not impaired. The patient stated that she first felt numbness and tingling in the left little finger and it turned white; that occurring about five days before she was seen. The heart, lungs and nervous system, with the exception of the local symptoms in the hands, were quite normal. Dr. Zeltner's first impression at the time he saw her, was that her finger had been frozen, but the rapid alterations of color soon showed that this explanation was not correct. When the finger first turned white, she had no pain, but at the time she came under observation there were distinct painful paroxysms of about one half-hour's duration, which came on three or four times a day. When first seen the fingers of each hand, three in number, were distinctly cyanotic, the little finger of the left hand more than the others. At present, the middle finger of the left hand and the fourth finger of the right hand are most affected. The tips of the fingers are very tender to the touch. In the center of the pulp of the middle finger, the skin appears to be raised and white, with a reddish zone around it, much resembling a small blister. Apparently, gangrene has set in in this finger. There has been no change in the nails and they continue to grow.

The patient has been treated with galvanism every day. The hands are immersed in water, connected with a positive pole and the negative is applied at the nape of the neck. Several times a day the patient is instructed to raise the hands for a few minutes. A thick cotton dressing is applied to the hands when she goes out of doors, and she has the additional protection of a muff. The paroxysm of pain was best relieved by a 10 per cent. solution of menthol in alcohol. Chloroform liniment was applied, but with no effect. The patient says that she gets more relief from applications of very cold water. Warm water increases the pain. Internally she was given the suprarenal gland, with no effect. Later she was given quinine and strychnine with marked improvement.

OPTIC ATROPHY IN A CHILD.

Dr. H. T. Patrick presented a boy of twelve years who was first seen September 18, 1900, through the kindness of Dr. F. A. Phillips. The father had died insane, probably of general paresis. The first child was fifteen years of age and perfectly well; the second pregnancy terminated with a mis-

carriage at about four months, and the patient was born at full term about two years later. The following child was born three years after the patient, and presented some evidence of inherited lues, while the last child was afflicted with various skin diseases until several years old. Soon after the patient's birth he developed snuffles which continued for several years. The mother stated that he had never been strong on his legs, and walked "as if his shoe hurt him." Otherwise, his development was normal with the exception of occasional nocturnal enuresis which still continued, the urine sometimes slowly dribbling away. For the last three years he had been subject to attacks of vomiting which always occurred in the morning and were followed by sleep, after which he seemed perfectly well. During the last year these attacks had begun with a pain in the head, and had been more frequent, and after an attack the scalp would be tender for a day or two. They were apparently migrainous in character. Vision began to fail only a few months previously, and at the time of examination as determined by Dr. Phillips, was R 15-200; L 20-200, and there was simple atrophy of both optic nerves. The right pupil was slightly larger than the left, both were somewhat irregular and responded to accommodation but not to light. Sensation and muscular power were normal, there was very slight incoördination of both upper and lower extremities, and slight intention tremor of the hands. Deep reflexes were normal, and there was no ulnar analgesia, but pressure on the ulnar nerve seemed to be rather less painful than normal. The teeth, while not of the typical Hutchinson type, were considered to indicate congenital syphilis. Since September the boy had become totally blind, the other symptoms remaining about the same. On account of the brisk knee-jerks, the diagnosis of precocious tabes would be rather venturesome, but the case was considered to be of that type; that is, to be classed with the late degenerative diseases caused by syphilis, such as tabes and general paresis.

OPTIC ATROPHY IN A MIDDLE-AGED WOMAN.

Dr. Patrick presented a patient, who had been seen through the kindness of Dr. R. A. MacArthur. She was in vigorous health, and a careful examination revealed absolutely no sign of disease except the double optic atrophy. There was an indefinite history of some sort of a sore on the vulva a number of years before, but no history of secondaries or subsequent trouble until the vision began to fail about six months ago.

OPTIC ATROPHY IN A MAN OF SIXTY-NINE.

Dr. Patrick presented this patient, seen at the request of Dr. Phillips. No cause for the simple optic atrophy except general and well-advanced anterior sclerosis was found. He presented a large cicatrix of the prepuce which he said had been caused more than thirty years before by his wife viciously pinching it with her thumb-nail, this wound being followed by "blood poisoning," by which the patient meant severe local inflammatory changes. Further than this, no evidence of syphilis could be found.

HOMONYMOUS HEMIANOPIA OF SUDDEN ONSET.

Dr. Patrick reported a case, referred by Drs. Broell and MacArthur. The patient was a young married woman in perfect health, with no signs of disease except the visual condition. Two months before, while attending to her housework, she stooped to pick something from the floor, and on rising felt dizzy, and discovered to her consternation that she was practically blind. She had severe pain in the head, was dizzy and vomited. For several days she was nearly blind, when vision gradually improved until there was left the present hemianopia. At examination several weeks ago the Wernicke sign was positive, but examination of the patient at the meeting failed to confirm this. The lesion must have been a hemorrhage, but in the absence of all evidence of heart, vascular, kidney, diathetic, and toxic disease, and with no hemophilia, the cause of the hemorrhage was exceedingly obscure. Considering the Wernicke sign to be negative, Dr. Patrick was inclined to believe the lesion an occipital one, as he had once before seen hemianopia from cerebral hemorrhage in this region, and a hemorrhage elsewhere in the visual tract would probably have involved other structures also.

FACIAL PARALYSIS, MULTIPLE SCLEROSIS AND CEREBRAL THROMBOSIS.

Dr. Patrick also reported this case. The patient was seventy-two years old and had had an almost complete facial paralysis on the left side since he was two years old. There were no signs of ear disease, and the cause of this facial paralysis must remain obscure, although the escape of a few twigs of the upper branch of the facial would incline one to consider the lesion nuclear or radical. The patient presented a perfectly typical and exaggerated intention tremor affecting the arms most, but also involving the lower extremities, the trunk and the neck. This tremor he had had for at least thirty-five years, during which time it had gradually been

growing worse. There were no sensory symptoms, no nystagmus, and no disturbance of speech, except such as was due to the facial paralysis. In the absence of evidence of any other cause, Dr. Patrick was inclined to believe that the tremor was due to multiple sclerosis.

Several weeks before in the night, the patient developed paresis of the right lower extremity. This had been gradually improving and he now walked almost as well as he did before this came on. As he had advanced arterio-sclerosis, a senile heart, at times an intermittent pulse, this monoplegia was believed to have been caused by thrombosis of an artery in the leg center of the brain.

A COMPLICATED CASE OF NEURALGIA AND NERVE LESIONS.

Dr. Bayard Holmes presented the clinical history and post-mortem specimens of a case of antrum infection and sigmoid thrombosis, without present middle-ear disease, presenting the symptoms of facial neuralgia and none of the ordinary symptoms of disease in the petrosa: retropharyngeal gravity abscess, general sinus thrombosis without much impairment of cerebration. The case was reported to the Society owing to the difficulty presented in the diagnosis. There were few psychical symptoms, and the various neuralgias and peripheral nerve lesions gave no very definite pointings for cerebral localization. A rough synopsis of the case was given as follows: Rigor and high temperature beginning without apparent cause, neuralgia of the right fifth nerve for ten days, typhoid or septic condition resembling sinus thrombosis for six weeks, abscess appearing suddenly in the posterior right pharynx, six weeks later discharge from the right ear, paralysis of the right leg, death, autopsy, antrum and general mastoid disease, sigmoid and general sinus thrombosis, extending into the cortex of the left hemisphere.

From a study of this case Dr. Holmes drew the following conclusions:

(1) Mastoid antrum disease is the appendicitis of the head.

(2) In every case of infection within the head where some other source of the infection can not be demonstrated, the mastoid antra should be explored.

(3) The facial neuralgia is not explainable by the pathologic findings.

(4) The excellent mental condition even up to the last seems hardly consistent with the obliteration of both jugulars and the suppuration in the great sinuses of the dura.

Periscope.

CLINICAL NEUROLOGY.

RAPPORTO TRA ACCESSI EPILETTICI ED AUTOINTOSSICAZIONE (Relation between Epileptic Seizures and Autointoxication). Luigi Roncoroni. (*Archivio di psichiatria*, etc., 1900, xxi. No. 6).

At present the doctrine of autointoxication in epilepsy rests upon very contradictory findings. Some find the urine hypotoxic before and hypertoxic after convulsive attacks, while others find the toxicity exactly reversed. A survey of the entire subject of the toxicity of the urine, blood, sweat, etc. shows inconstancy and contradiction instead of uniformity. There is similar want of conformity in the results as to the amount of toxiferous urine, blood, etc. necessary to poison animals. The present author has attempted to study this subject anew. He begins with the urine, and first sees to it that its temperature agrees with that of the animal to be experimented upon, and also that it is filtered and sterilized. It must also be perfectly fresh and acid in reaction. The specific gravity must always be the same as when passed. It must neither be concentrated nor diluted, for its density can stand in no relation with its toxicity.

The urine selected for experiment is taken from the amount passed in 24 hours before and after an attack. Fifty parts of urine are injected for 1,000 parts of animal. In regard to the organ in which urine is injected, the intravenous method disturbs the blood-pressure too much and thus masks the toxic effect. The peritoneal cavity is likewise unsatisfactory, as the power of absorption doubtless varies. The intestine is objectionable for several reasons. The author therefore relies upon multiple subcutaneous injections. Thus 25 c.cm. can be divided into five portions, injected in the animal's belly and back. The patients who furnish the urine were 15 male epileptics, and specimens were obtained before and after attacks and in the intervals. The experiments are given in full: Rabbits were the animals used. The subcutaneous procedure was used for the principle method, while for control purposes the endoperitoneal route was chosen. A few cases are reproduced, viz.:

No. 1. Patient aged 47; an epileptic since childhood. After attacks he is agitated and impulsive; he is very excitable in the intervals. He has ideas of persecution, etc. A specimen of his urine five days after and two days before a typical attack was injected into the peritoneal cavity of a rabbit and caused depression and tremor for six hours. Specimens of urine four hours after a typical attack injected into the peritoneal cavity of a rabbit (15 c.cm.) caused temperature to fall from 36.5 to 35.8. The animal was insensible to stimuli for twelve hours. Specimen of the same urine injected by subcutaneous route gave only slight depression.

No. 10. Patient aged 36; an epileptic since childhood. His attacks were followed by periods of maniacal excitement. Urine passed $3\frac{1}{2}$ hours after attack injected into the peritoneal cavity of a rabbit, caused severe depression and inability to respond to stimuli.

As all the cases experimented upon in the author's very careful methods show a certain amount of variability, the lack of conformity shows that autointoxication is only a contributory cause of the epi-

leptic paroxysms. In other words, epilepsy is not solely an auto-intoxication although the increase of the toxic power of the urine shows a possibility that increased formation of toxic matter in the body may be a contributory factor in the production of the attacks.

CLARK.

UEBER CEREBRALE BLASENSTÖRUNGEN (On Cerebral Bladder Disturbances). Ernst V. Czyhlarz and Otto Marburg (Jahrbücher für Psychiatrie und Neurologie, 20 Vol. No. 1, p. 134).

The existence of true cerebral bladder symptoms has been a question of much debate, with the weight of opinion inclining towards its non-existence. This paper aims to discuss the question in a more precise way by means of microscopic study and by the critical examination of the cases reported in literature. Under cerebral bladder symptoms is understood all those symptoms referable to the bladder which occur in the course of cerebral affections without psychical disturbances or involvement of consciousness, if the bladder apparatus in its nervous, muscular, and glandular functions is perfectly intact. To be excluded are all those affections of the brain which have no strictly limited localization, as commotio cerebri, progressive paralysis, senile dementia, and those in which the shock of the attack, as in apoplexy or in fever, may produce disturbances of themselves. To be included under the latter is encephalitis. In such cases the assumption of Frankl-Hochwart and Zuckerkandl, that we have to do with an irritation of the intra-cerebral inhibitory paths, is the most reasonable explanation. According to the present state of our knowledge, the cortical bladder center is in the motor zone, at the point of conjunction of the arm and leg centers, somewhere in the region where, according to Obersteiner, the center for movements of the thigh is located. The clinical manifestations of disturbances located here is the impossibility of voluntary urination, that is retention, which, in unilateral focal lesions, is temporary. In regard to the bilateral foci, no opinion can be expressed. The sub-cortical center lies in the corpus striatum and has to do with automatic movements of the bladder, resulting from conscious, sensory stimulation. A third center reacts to effective stimuli and plays an important rôle in cases where the effective states are most frequent, as in children or psychopathic women. This center is situated, probably, in the thalamus. The influence of the cerebellum in central bladder affections is stated in this way: cerebellar affections have a tendency to change retention, caused by pyramidal tract lesion, to an incontinence, and cause the symptoms relating to the bladder to become more pronounced. The cerebro-spinal motor paths connect these centers with the conus, the pyramidal tract plays an important rôle in this connection. The skepticism in regard to the existence of central bladder symptoms is unjustified. Its existence may be regarded as proven, when more cases have been studied. The bladder symptoms due to cerebral lesions may be an aid in localisation where the seat of the lesion is doubtful. In support of the above conclusions, the authors present cases from literature, as well as some of their own.

SCHWAB.

ZUR SYMPTOMATOLOGIE DER PARALYSIS AGITANS (The Symptomatology of Paralysis Agitans). D. Frank. (Monatsschrift für Psychiatrie und Neurologie, September, 1900.)

The author reports on several cases of paralysis agitans observ-

ed in Oppenheim's Clinic, in which special symptoms were present. In several cases the so-called "false foot-tremor" was seen. This is brought out by placing the foot in dorsal flexion, and holding it for several seconds. Typical tremor ensues which differs from the ordinary foot-clonus in that the movements are slower, and less rhythmic, and are seemingly produced by the extensor muscles. The symptom is of value in cases in which the tremor does not appear early, and in cases in which the differentiation between paralysis agitans and senile tremor is difficult. The writer also calls attention to the occurrence of associated movements in cases of shaking palsy. Two cases of unilateral disease are reported, in which active movements of the muscles of the affected side were accompanied by similar movements of the unaffected, although active movements of the latter were followed by no similar state in the diseased areas. In one of these cases the author notes that the side of the face corresponding with the affected half of the body was involved in the rigidity and tremor of the disease. Another case is reported in which there were marked disturbances of sensibility, including diminution of both painful and temperature senses.

The paper concludes with the outline of two cases in which the differential diagnosis between paralysis agitans and senile tremor of arterio-sclerosis was in doubt, and the symptoms pointed again to a strong inter-relation in the pathology of these two diseases. One patient presented the typical manifestations of paralysis agitans, and in addition, headache, vertigo, bulbar manifestations and exaggerated knee-jerk. The second case presented only a superficial resemblance to paralysis agitans, with the exception of a tremor. There was predominance of symptoms particularly suggestive of arterio-sclerosis, as paresis of the extremities, spasms, and increase of the patellar tendon reflex and true ankle-clonus, together with mental defects, dysarthria and dysphagia. Cases have been reported in which these manifestations of senile degeneration have faded away, and have been followed by manifestations difficult to distinguish from those of paralysis agitans. Such a variety of symptoms, which point unmistakably to involvement of the cerebral hemispheres, bears strong evidence of an association of this disease with vascular degenerations.

JELLIFFE.

CONTRIBUTION A L'ÉTUDE DE L'ANATOMIE PATHOLOGIQUE DE L'HEMI-ANOPSIE D'ORIGINE INTRA-CÉRÉBRALE (Contribution to the Pathological Anatomy of Hemianopsia of Intra-cerebral Origin). Joukowsky (Nouvelle Iconographie de la Salpêtrière, No. 1, 14th Year, Jan.-Feb., 1901, p. 1).

A study of two cases of hemianopsia caused by the destruction of the cortical visual center. Case I. An old man with left homonymous hemianopsia. He had no paralysis nor sensory aphasia. Autopsy showed a softening in the right hemisphere in the region supplied by the posterior cerebral artery, which had destroyed the region of the calcarine fissure and the neighboring part of the occipital pole. Small softenings were present in the convolutions O1 and O2. Histological study showed that the lesion was located in the calcarine fissure, destroying chiefly the lingual and fusiform lobes, and that this lesion penetrated in the adjacent white substance to the internal wall of the posterior horn. This lesion was followed by a sclerosis of the radiate fibers of Gratiolet, by sclerosis of the inferior portion of the retro-lenticular internal capsule, and by that of the

inferior posterior part of the optic tract. This sclerosis did not show secondary degeneration. In this case then there is a lesion exclusively of the intra-cerebral visual apparatus, causing the phenomena of hemianopsia. Case II. Double hemianopsia with preservation of the central portion of the field of vision. Autopsy: The right hemisphere presents an old focus of softening upon its inferior surface. The hippocampal convolution is softened, especially in the external posterior half. The retro-lenticular fold, the lingual lobe, the fusiform and the third temporal are all affected. Upon the internal surface, the calcarine fissure is involved in its whole extent. In the left hemisphere there is a softening in the parietal lobe. In this case there is in part a softening, which has destroyed in the right hemisphere, the region of the cortical visual center, in part a focus of softening located in the left hemisphere, which occupies the whole substance of the pli-courbe and the neighboring region of the temporal and parietal lobes. These observations confirm the results of observers as to the origin of intra-cerebral hemianopsia, as in these two cases, in spite of the great extent of the lesions, degeneration of the fibers of Gratiolet and of the corpus callosum was not observed. The lesion then was strictly focal in its nature, in the optic tract.

SCHWAB.

KERNIG'S SIGNE (Kernig's Sign.) J. Roglet. (*Journal de Médecin*, Oct., 10, 1900.)

The author here reports on an extensive series of observations on the subject of Kernig's sign. This sign, as is well known, consists in the possibility of completely extending the leg on the thigh when in the sitting posture, in a patient suffering from certain meningeal diseases. There is a certain amount of contracture of the flexors of the leg. This contracture, on the other hand, disappears, and complete extension can be obtained when the patient is lying on the back. It is therefore easy to elicit this phenomenon if, after having ascertained the absence of all contracture in the supine position, the patient is made to sit up with his legs hanging free, or even sitting up in bed. Certain precautions are therefore necessary. The observer must see that the patient sits straight upright, and does not lean to one side or the other, and that the thighs form a right angle with the trunk, certainly not less. Disregard of this point may lead to considerable error. The attempt to obtain Kernig's sign is sometimes attended with considerable pain. The amount of extension obtained at the knee varies considerably. When Kernig's sign is well marked it is impossible to exceed a right angle; when slight, an obtuse angle equal to 135 degrees; but intermediate degrees may be obtained. Nor is the sign always bilateral; occasionally it has been observed on one side only, or to an unequal extent in both limbs. The intensity of the phenomenon may vary from day to day, or may even disappear completely. To be therefore sure of its non-existence several observations are necessary. Kernig's sign may appear at the same time as the other symptoms, rigidity of the neck, ocular symptoms, contracture, etc., but most usually it appears about the third or fourth day of the disease. In tuberculous meningitis its appearance is most delayed. It is very rare for it to be the only symptom present. Kernig's sign may disappear at variable periods. In meningitis ending fatally, it may persist up to the end, but in other cases it may disappear shortly before death, especially in cases, where owing to coma, there is general flaccidity, and all contractures give place to paralysis. It is under

such circumstances that Kernig's sign has been missed in several cases of meningitis. The diagnostic value of this sign is considerable as it has been met with in 85 to 90 per cent. of cases of meningitis. It is, however, present in other conditions with meningeal inflammation—for example, meningeal hemorrhage and cerebral abscess—but this seems to be exceptional. Its value is reduced, therefore, by the fact that it rarely appears at the beginning of the case or occurs alone. The diagnosis is consequently in many cases apparent independent of this sign. Roglet explains the phenomenon as follows: In a person in a sitting posture with the thighs flexed to some degree, and the trunk of the legs extended, the flexor muscles are on stretch, and their elasticity is soon exhausted. If under the influence of spinal irritation and irritation of the spinal roots, where this may be due to increase of intraspinal pressure or to the presence of purulent exudation, there is naturally produced some increase of muscular tonicity. This diminishes the elasticity and length of the flexor fibers which then become too short to allow of extension of the leg on the thigh, and thus the sign is produced.

JELLIFFE.

PATHOLOGY.

UEBER ERKRANKUNG DES GEHIRNS NACH TRAUMA (Traumatic Diseases of the Brain). M. Koppen (Archiv für Psychiatrie und Nervenkrankheiten, xxxiii., 2, 1900).

The author reports in detail eight cases, with pathological findings, from his service in the Charité, and gives the following general conclusions:

Violence when inflicted upon the skull frequently produces small lesions of the base of the frontal lobes, at the apices of the parietal lobes and of the occipital. They may even be found when the skull is not injured. At the affected areas destruction of the tissues is shown by hemorrhagic infiltration and various stages of encephalitis. From these foci scars and other defects with a cicatricial investment later appear.

The presence of these scars may be taken as an indication of a previous trauma. Foci of softening are frequently localised in the cerebral cortex, but over small cicatrices, with numerous areas of hemorrhage, may be assumed to be of traumatic origin. The existence of such defects is shown by small contractions or depressions. When these scars and defects are found the incidence of a traumatism is almost certain.

The exuded blood may be entirely resorbed or for a long time may remain in the form of pigment deposits or of colored amorphous masses, or small bodies which preserve the outward form of blood corpuscles. The absence of signs of hemorrhage does not negative the occurrence of a trauma.

Certain symptoms stand in direct relation to the occurrence of the lesions of the base of the brain, *e.g.*, indications of the meningitis, as rigidity of the neck and forced positions of the body.

Severe cerebral symptoms, as coma with spasms, in which death ensues, may appear suddenly in traumatic cases, without the appearance of any other condition than the minute areas of destruction of the basal cortex. These compel the assumption that an irritation proceeds from these areas, sufficient to call forth general symptoms, probably in the form of circulatory disturbances. These severe cerebral manifestations may ensue long after the trauma.

The symptoms of sudden irritation of the brain and of a general

mental degeneration, may also develop after injuries to the head, which have shown no immediate consequences and especially have not caused any severe disturbance of consciousness. Symptoms following immediately after the accident fail in cases in which a material change in the cerebral substance has taken place.

The brain may be injured by an accident, in which there has been no direct blow upon the head, but in which the impact has been upon the foot or the knee or the buttocks.

Dementia ensuing upon an injury to the head is not identical with dementia paralytica, and may best be described as dementia post-traumatica. There are stages in this disease, especially when the history is not known, when confusion with dementia paralytica is highly probable.

Universal changes in the vessels, which have been described by Kronthal, and Friedman, as having taken place in traumatic cases, were observed by the author in one case, but were wanting in others, in which, owing to the long time following the occurrence of the injury they might reasonably have been expected. The question arises as to whether such vascular changes are a necessary accompaniment of concussion of the brain, or merely an incident. It is further to be remembered that such universal changes may occur in arteriosclerosis.

In case of extreme dementia following trauma there is often no other lesion than the cicatrices in the cerebral cortex, so that the development of a general irritation affecting the entire nutrition and blood supply of the brain must be assumed. JELLIFFE.

HISTOLOGISCHE VERÄNDERUNGEN DES CENTRALNERVENSYSTEMS UND DES MAGENS BEI TETANIE DES MAGENS (Histological Changes of the Central Nervous System and of the Stomach in Tetany of the Stomach). L. Ferrannini (Centralblatt für Innere Medicin, No. 1, 1901. p. 1, Jan. 5).

In 1869 Kussmaul for the first time called attention to a form of tetany which occurred in individuals with gastrectasia. Since then about fifteen cases have been published. Tetany does not occur in all dilated stomachs, but only in those cases in which a constant hypersecretion exists. The following case is the subject of this study. Woman, 23 years old, gastric symptoms for eleven years. The stomach was found to be enlarged, the total acidity 2.8%, free hydrochloric 2.35%. The convulsive symptoms of tetany were present in a marked degree. Autopsy: Stomach enormously dilated, chronic catarrh. Venous hyperemia of the pia and of the brain and the cord. Ganglion cells of the nuclei of the medulla and the dorsal portion of the cervical cord showed pathological alteration. Dilatation of the perivascular lymph spaces, together with swollen appearance of the nerve cells, chromatolysis. The nuclei of the nerve cells were mostly enlarged and peripherally situated, irregular in form and staining qualities. The nuclear membrane was thickened and intensely stained. The cell branches were rather thin, sometimes tortuous and showing in places nodular thickening. Nothing abnormal was discovered in the nerve fibers. These definite and severe lesions of the nerve cells speak against a reflexory origin of tetany. The assumption of an intoxication best explains the symptoms and the pathological appearances. The author believes that there is an increased production of toxic products rather than a diminished excretion of the same. SCHWAB.

DIPHtherie TOXIN UND DER NERVEN-SYSTEM (Action of Diphtheria Toxin on the Nervous System). Billchowsky and Nartouski. (Neurologisches Centralblatt, July 1, 1900).

The authors describe experiments which they have recently carried out in Mendel's laboratory. The pathological changes have been located in three situations—the peripheral nerves, the spinal cord (parenchymatous and interstitial myelitis, with secondary changes in the nerves and muscles), and the muscles. The authors injected sterile diphtheria toxin into white mice, rabbits, and guinea-pigs. Large doses produced rapid death, with anatomical evidence both of general intoxication and of a special action on the vascular system. The animals which survived this stage developed, eight or ten days after the injection, more or less typical post-diphtherial palsy. The vessels were found quite full and with pathological changes in their walls leading to scattered foci of hemorrhage. There was no sign of meningitis or encephalitis, nor were the nerve cells of the brain or cord with a few isolated exceptions affected. Preparations by Marchi's method showed nothing noteworthy in the brain or cord, but extensive degeneration of the myelin sheaths of the peripheral nerves; this was confirmed by Weigert's procedure. The muscle fibers were the seat of fatty change. The conclusion is drawn that the essential lesion is parenchymatous degeneration of the peripheral nerves; the slight changes in the anterior horn cells are held to be secondary or of cachetic origin; while the vascular alterations play but a subordinate rôle in the pathogeny of post-diphtherial palsy.

JELLIFFE.

SULLE MODIFICAZIONI CHE IL PROCESSO PUTREFATTIVO PUÈ IMPRIMERE ALLE CELLULE NERVOSE GIÀ PATHOLOGICAMENTE ALTERATE (Putrefaction in Pathological Changes in Nerve Cells). L. Bardzky. (Rivista di Patologia Nervosa e Mentale, vi., 1900, No. 2, p. 49).

This observer has attempted to decide the nature and extent of putrefactive *post-mortem* changes in the nerve cell as distinct from the pathological changes of disease during life, a point of special importance in all researches on the finer cortical pathology of the human brain. After referring to the work of Schultze, Hutchinson, Trezebinski, and others, he gives the following results obtained by himself: (1) The coloration (chromophilia) of the achromatic substance of the nerve cell and its rarefaction are changes which are so subtle and shifting as to be impossible to recognise with certainty as due to morbid agencies occurring during the evolution of the putrefactive process; (2) that vacuolation of the fundamental substance (protoplasm) of the cell is a change belonging to the same category; (3) that chromatolysis or destruction and disappearance of the substance of Nissl's bodies, partial or total, has its peculiar and specific aspects which it maintains very constantly, so that these different characteristics can be recognised even where putrefactive changes are somewhat advanced; (4) that the initial stage of chromatolysis preserves a very constant appearance, which is characterised by a swelling and breaking up of the chromatic bodies; (5) that the cribriform condition of the cell body is clearly recognisable only in the initial stages of putrefaction, and this condition readily undergoes change into pulverulent state (dusty disintegration and dispersion of the chromatic substance) of the protoplasm, which is identical with the condition due to simple cadaveric decomposition;

(6) that the pulverulent state of the chromatic substance is difficult to admit as being of pathologic nature and due to disease *intra vitam*, as both this and its precedent condition, the cribriform stage, are so readily produced under the influence of putrefactive agencies. The methods of Nissl were used in the author's researches.

JELLIFFE.

PSYCHIATRY.

CONTRIBUTION A L'ÉTUDE DU SUICIDE DANS LA PARALYSIE GÉNÉRALES (Suicide in General Paralysis). A. Monestier. (Annales médico-psychologiques, March, 1900, p. 189).

Monestier comes to the following conclusions: Suicide is quite common in general paralysis, both in the course of the disease and in its initial period. There are, however, a number of cases where the suicide is only apparent, and where the patient does not really wish to put an end to himself. He becomes the victim of his illusions, and loses consciousness of the danger he may run on account of the marked disturbance of a clear perception of the reality of things. In most of the cases of deliberate suicide the suicidal ideas have the characteristics not only of dementia, but also of the delusion which the patient may have, a delusion which is almost always irregular and transitory. This irregularity and transitory character are more or less marked; most frequently the ideas of suicide are sudden and of short duration. It is easy to divert the patient from them and he takes no care to hide them. There are, however, other cases where the means employed to commit suicide differ in no degree from those which other insane employ. The patients seem to have a definite idea of committing suicide as shown by the precautions which they take, by the premeditation of the act, and by the length of their preparations for it. In these cases there is less dementia.

JELLIFFE.

PROGNOSTIC ÉLOIGNÉ DES PSYCHOSES DE LA PUBERTÉ. (Prognosis of the Psychoses of Puberty.) Cullerre (Archives de Neurologie, x., 1900, September, p. 246.)

Cullerre has studied 120 attacks of the psychoses of puberty in subjects from fifteen to eighteen years of age—53 males and 57 females. Of these 3 died in the first attack. There were 33 cases of dementia præcox which came on in 18 during the first attack, in 9 during the second, and in 2 in the third. In 4 cases the attack degenerated into secondary systematized insanity with mental enfeeblement. There were 20 cases of periodic insanity, all forms being represented. There were 25 cases of recurrence with varying issue. These recurrences were most frequently benign and were at considerable intervals apart. This group was the most favorable in point of view of ultimate prognosis. There were 9 cases of insanity with a consciousness of the condition, obsessions, or impulsive states. These cases were generally permanent. In 30 cases the patient disappeared from observation after the first attack. The clinical aspects of the first attack, however, would permit us to classify them with the subjects of the preceding groups. The prognosis of the attack in the insanity of puberty is favorable in the enormous proportion of 79%, but the ultimate prognosis of the disease is more serious. The individual who is cured of this form of mental disease runs the risk in the future of recurrences, of dementia præcox, of per-

iodic insanity, or of returns of the insanity of obsessions. The least sad feature is that the inevitable recurrences are reduced to a small number at long intervals apart, with long periods of more or less normal health between them. STEDMAN.

DE L' ALITEMENT (REPOS AU LIT) DANS LE TRAITEMENT DES FORMES ARGUES DES MALADIES MENTALES ET LAS MODIFICATIONS QU'IL POURRAIT ENTRAINER DANS L' ORGANISATION DES ETABLISSEMENTS CONSACRES AUX ALIÉNÉS (Treatment of Acute Insanities in Bed). S. S. Korsakow (Archives de Neurologie, Vol. x., 1900, p. 273).

Korsakow, in a communication made to the Thirteenth National Congress at Paris, comes to the following conclusions: In the question of treatment of mental disease by rest in bed, we must distinguish between the system of bed treatment as a mode of the internal organizations of asylums and the employment of bed treatment as a therapeutic measure. The foundations of the system of bed treatment are as follows: The use of the bed is considered as an essential element in the treatment. The stay in bed is obtained not by violence but by means of the moral influence and the suggestive effect of the environment. It requires a particular organization of attendants, which is only one manner of caring for the patients and for following and carefully observing the physical and mental symptoms of the disease. The refusal to make use of separate rooms as a principle is not a fundamental condition of the system in question, but it is a powerful aid in the development of the bed treatment, and on the other hand, the diminution in the use of separate rooms is one of the first benefits of the régime. The exact determination of the time which the patients must remain in bed, of their walks and occupations out of bed, constitute the essential part of this system. The rest in bed must be regulated in all its details from absolute confinement to the bed up to the most limited use of it. The use of common wards is a powerful means in the regular organization of the system of bed treatment, although we may be obliged to apply the bed treatment equally well in separate rooms; this has a secondary importance in the system in question. The forced detention in bed is not an element of the régime of bed treatment as a system.

The principal advantages of the system are as follows: Greater order in the asylum, especially if it is crowded; greater security for the patients; greater facility in caring for them and in clinical observation; a limited use of isolated rooms, the system of rest in bed being capable of abolishing completely the imprisonment in cells. Finally, the diseases characterized by a state of agitation have a more moderate course. In the asylums where the system of bed treatment is applied the mortality of some grave acute psychoses is notably diminished. With the system of bed treatment we must not include other systems which have a favorable action, such as that of moral influence, of non-restraint, of work, and of open doors. It is possible to successfully combine all these systems. The indications for absolute rest in bed are only very imperfectly established. To have these indications upon a scientific basis, we must not only multiply researches, but also their sphere. Investigations are desirable as to the effect of rest in bed and lack of exercise upon the composition of the blood, the elimination of toxins from the organism, and the mental functions, and above all upon the energy of the directing force of the mind. The principal indication for rest in bed is a state of excitement. Prolonged rest in bed carried out in a

rigorous manner is contraindicated in patients with a sluggish intelligence, predisposed to apathy, anemia, and masturbation. It will be very important to study the effect of this treatment upon mental diseases in young subjects, in case they become incurable. Rest in bed must be applied in different ways, according to individual indications in almost all acute psychoses, especially at the initial period of the disease. It has an especially favorable action in the majority of maniacal cases, in cases of alcoholic delirium, and in many forms of mental confusion and of melancholia. There are vital indications for its application in patients whose mental trouble is connected with infection and high temperature, and in patients who are greatly exhausted.

STEDMAN.

IL PESO SPECIFICO DELLA SOSTANZA BIANCA E DELLA GRIGIA NELLE VARIE REGIONI DEL CERVELLO DEGLI ALIENATI (Specific Weight of the Grey and White Matter of the Brain in the Insane). C. Agostini (Rivista Sperimentale di Freniatria, Vol. xxv. fasc. 2, p. 257).

The author has made a series of researches on the comparative specific weight of grey and white substance of the brain in various parts in the healthy and the mentally diseased, and in certain mammals. The specific weight of the brain of the insane is on the average higher than that of the sane, and reaches its highest level in the alcoholic and epileptic types of insanity. In the healthy brain the specific gravity increases from before backwards, the occipital lobes being the heaviest. Comparing homonymous parts of the two hemispheres no great variations were noted, but on the whole the specific gravity of the right hemisphere was rather less than that of the left. In the brain of the newborn all these differences are much less marked, and this applies still more to the brain of mammiferæ so that the author feels this can be used as a test of the degree of evolution of a brain. The greater the difference in specific gravity between different parts of a brain and between the grey and white substance, the more highly evolved the brain.

JELLIFFE.

Notes and News.

A "NEUROPATHIST," of Los Angeles, Cal., was recently fined \$100 for practicing medicine without a license; on appeal, the judgment of the lower court was affirmed by the Supreme Court.

THE only bibliography of American Neurology and Psychiatry published is to be found in this Journal in advertising pages xviii. and xx. It already consists of nearly 900 references. Cut these references out, paste them on cards, and keep a complete index of what is being written in America on neurology and psychiatry.

THE DANVERS, MASS., INSANE HOSPITAL, according to its twenty-third annual report, had 1,053 patients at the end of the past year. The daily average was 989. The superintendent's report asks for appropriations for a detached pavilion for surgical operations and other items, in all estimated to cost \$54,000.

DR. SANBORN, Superintendent of the Maine Insane Hospital, reports that 1,020 patients have been treated during the past year. The new admissions were 273, while there were 249 patients discharged. The Superintendent asks for an establishment of a pathological department and the general renovation of the old wings of the hospital.

DR. H. C. EYMAN, Superintendent of the State Hospital for the Insane, at Massillon, Ohio, recommends in his annual report that the State establish an institution for the treatment of alcohol and opium habits. There were 907 patients in the hospital during the past year. The new admissions amounted to 543.

NEWSPAPER NEUROLOGY: "One of the oldest and wealthiest residents of this section (Sioux City, Iowa), submitted to a delicate operation yesterday. His malady is one of the rarest in the world, less than forty other similar cases having ever come to the notice of medical men. It is called eurthro-millilagia, which causes the blood to coagulate and refuse to go back to the heart. The pressure caused by the active blood against the stagnant portion causes great pain in the parts affected. . . . The operation consisted in cutting nerves controlling veins near the instep. . . . A French physician published a book in two volumes in which eurthro-mallilia is exhaustively treated of and a remedy suggested. The patient sent for the books, had them translated, and has undergone the operation on the suggestion of the French specialist." St. Paul (Minn.) Dispatch, Nov. 6th, 1900.

CUTLERY FOR LUNATICS was recently advertised for by the British Admiralty office, and it brought to light some unusual cutlery that, while made regularly in Sheffield for the past 20 years or more, is but little known. The knives have perfect dull, round blades, with a small cutting area about an inch long, situated in such away that it cannot be used except for the purpose intended. The fork terminates in a small, round ball, on which there are three prongs less than an inch long.

THE ANNUAL MEETING of the American Medico-Psychological Association held its sessions in Milwaukee, from June 11 to 14. The attendance was large and the discussions more than usually interesting from the standpoint of the prevention of insanity. For the following year Dr. R. J. Preston, of Virginia, was elected president. The meeting for 1892 will be held in Montreal.

It is now more than likely that the bill appropriating funds for the erection of a State Homeopathic Insane Hospital will pass the Pennsylvania Legislature. The question of its location is to be determined by a commission to be appointed by the governor. Those opposed to the establishment of such an institution hold that the erection of another hospital for Pennsylvania is certainly desirable, but it is unfortunate that it should be made a class institution, and at the same time a district hospital, which now seems probable. It is certainly a paradoxical proposition, for it assumes that all the patients from a certain district in the State must require homeopathic treatment.

THE BOARD OF CONTROL in Iowa, complain of the management of the Polk County Hospital for the Insane, which is the largest of the institutions outside of State management in Iowa. The chief complaint is the lack of attendants, there being one man to attend to fifty-six men patients, and one woman to attend to forty-eight women. The Board reports that efforts at economy and reduction of the maintenance rate has led to inadequate care and consequent abuses.

TWO NEW WINGS are to be added to the Gowanda State Hospital at a cost of \$150,000.

THE LCOMOTOR ATAXIA LEAGUE, consisting of 300 members suffering from this affection, offer a prize of \$10,000 for a sure cure of this disease. The League hopes to establish a sanitarium for the special treatment of its members.

THE COMMITTEE appointed to ascertain for the Connecticut State Medical Society the number of and the condition of epileptics in Connecticut, has completed its inquiry. The number reported was 542, of whom 315 are males and 227 females. According to the report, 224 cases are in public institutions; 114 are capable of self-support, and 128 adult epileptics are insane. The committee reports a lack of interest in the welfare of epileptics, and that little is done to promote their comfort and to ameliorate their condition. The investigators regard the number of cases reported to them to be the minimum, and are convinced that the actual number of epileptics in the State is not less than 1,000.

AT A RECENT MEETING of the trustees of the Pennsylvania State Hospital for the Insane at Norristown, arrangements were made for the expenditure of the \$128,000 recently appropriated by the legislature. Two homes will be erected for nurses entirely separate from the hospital, at a cost of \$100,000. At present the 300 nurses share quarters and dine with the patients. It is reported that 200 patients are compelled to sleep on the floor because of the crowded condition of the asylum. In the male department there were 15 deaths during the month and 33 admissions. In the female department there were 6 deaths and 29 admissions.

GYNÆCOLOGICAL SURGERY among the insane in the London, Ont., Asylum, has been summarized in a recent report on the asylums of Ontario. During the past year 55 patients have been operated on; 17 have recovered; 16 have improved; none have died; and so far as yet heard from 22 of the cases are unimproved mentally. It is expected that some of the 16 improved will become entirely well. At the London Asylum in 286 female patients examined, organic diseases

have been found in one or more of the pelvic organs in 243 of them. Only 43 of the whole number examined were free from pelvic disease. In 226 patients, 564 diseased conditions were found. During the five years in which this gynæcological work was carried on the percentage of recoveries was 52.7 per cent. as compared to 37.5 per cent. in the preceding five years. To Dr. A. T. Hobbs is due the chief credit of this work among the insane. Dr. Hobbs recently resigned the superintendency of the London Asylum to enter private practice.

THE NEW COUNTY INSANE ASYLUM at Marshallsea, Pa., is to be fire-proof, and two stories high. There will be a central building and two cottages, one for men and one for women, connected by corridors with the main building. Each cottage will have accommodation for one hundred inmates. The contract price is \$231,000.

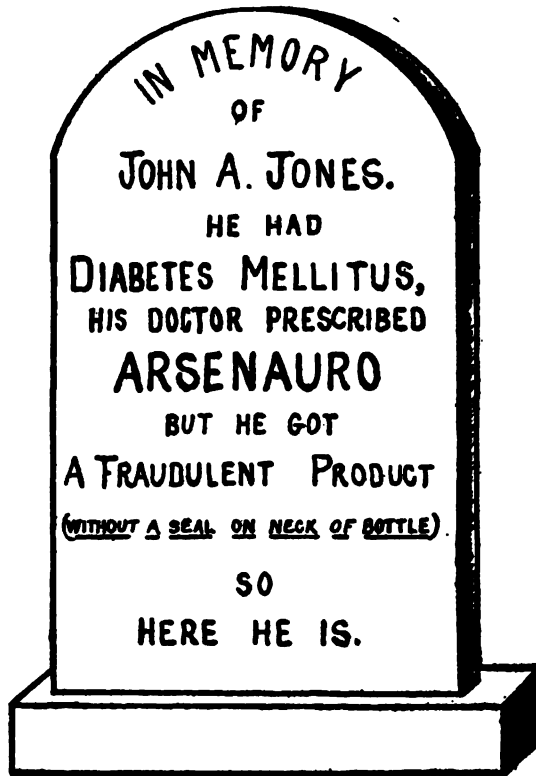
A STATE SANITARIUM FOR NERVOUS DISEASES, to be arranged on the principles of a psychopathic hospital, was the object of a bill introduced in the Michigan legislature which failed of passage. The bill provided for an appropriation of \$200,000. The object of this sanitarium was to provide an intermediate place of early treatment, between the home and the insane asylum, and thus prevent an increase of the chronic and incurable insane.

MARGARET WALLMAN AND KATE NOLAN, two nurses in the woman's department of the insane hospital at Mount Jackson, near Indianapolis, Ind., recently showed great heroism when the building caught fire, and succeeded in removing all the patients uninjured, although they themselves were quite badly burned.

THERE has been another charge of cruelty to patients in Bellevue. It is alleged that a man who died recently had been seriously assaulted, and that the post-mortem examination made by the coroner's physician showed peritonitis, which the coroner's physician held to be due to injury, and fractured ribs. Commissioner Keller thereupon instituted a searching inquiry which satisfied him that there had been no violence exercised on the patient at the hospital. He caused a second autopsy to be held, the findings of which were at variance with those of the coroner's physician. This second autopsy is reported to have disclosed no evidence of peritonitis, but showed that the man's death was due to acute mania and exhaustion. It was further asserted that, as no evidence of hemorrhage in the neighborhood of the fractured ribs was to be found, the fractures occurred after death.

DR. CHARLES W. PAGE, Superintendent of the hospital for the insane at Middletown, Ct., resigned as a result of a growing difference with the governing Board. At the time the Board requested Dr. Page to take the superintendency, his conditions that certain improvements be made and construction added to the hospital for its welfare, were accepted by the Board, and were pledged to him. Now it is found that these pledges have not been sustained by the legislature, and the Board is unable to fulfil its promises.

THE PENNSYLVANIA EPILEPTIC HOSPITAL AND COLONY FARM received but \$10,000 from the State appropriations this year.



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TABLE OF CONTENTS ON PAGE ii and iv

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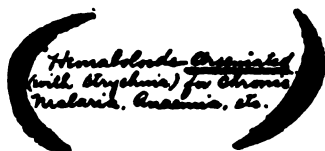
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Nervous and Mental Disease.

Original Articles.

A CLINICAL CLASSIFICATION OF INSANITY.*

By F. X. DERCUM, M.D.,

PROFESSOR OF NERVOUS AND MENTAL DISEASES IN THE JEFFERSON MEDICAL COLLEGE, PHILADELPHIA; NEUROLOGIST TO THE PHILADELPHIA HOSPITAL; CONSULTING PHYSICIAN TO THE ASYLUM FOR THE CHRONIC INSANE AT WERNERSVILLE.

The necessity for brevity and condensation will make impossible the discussion of any of the existing classifications. Up to the present time, however, no plan, whether based upon metaphysical or psychological conceptions; upon etiological or symptomatological factors, and least of all, I am sorry to say, upon pathological evidence, has been satisfactory. How such classifications lead us constantly into the field of uncertainty and speculation, how they end in entanglement and confusion, I need hardly point out. Indeed, in my own mind, I long ago abandoned all classification and came to believe that a simple enumeration of the various clinical forms of insanity is all that should be attempted. However, with an increasing experience, I have again changed my views.

*Read before the American Neurological Association, June, 1901.

Classifications are of value, and in insanity I believe a clinical classification to be of very great value. Classifications not only illustrate points of view, but they offer definite plans according to which related facts may be placed in proper juxtaposition, and they render possible a comprehensive and co-ordinated conception of the subject. I believe that such a grouping of facts is now possible in regard to insanity.

An increasing experience has also convinced me that the only knowledge of insanity of value to-day is clinical. Pathology has as yet so little to offer, that no intelligible scheme of interpretation is as yet possible, and probably will not be possible for a generation to come. For the present, it seems to me, we must content ourselves with a purely clinical interpretation. A clinical interpretation is not only of practical value, but I hope to show that it is also interesting and scientific. The clinical interpretation of a disease means literally its bedside interpretation, and into such an interpretation there enters every fact at our disposal, near or remote— not only the symptoms presented by the patient, not only his personal history and his family history, not only his sex, his age or epoch of life, but all that we know of the changes in the tissues, all that we know of the course, the duration and the prognosis of the disease in similar cases. In attempting a classification of insanity from the clinical standpoint, therefore, we are guided not by a single series of facts, such as are presented by etiology, or by symptoms, or by the scanty facts of pathology, but by all of these and others combined. It presupposes that we approach the subject from all possible points of view, that we weigh all facts no matter in which category they are found, that we explore all of the converging avenues of truth—in short that we take into account everything that enters into the natural history of the disease we are about to study. Such a method, it appears to me, is not only philosophical and scientific, but is necessitated by the condition of our knowledge of the subject, and I hope to show that it gives rise to clear and logical conceptions in a field where confusion and uncertainty too often prevail.

Again, I have long ago come to the conclusion that insan-

ity must, as far as possible, be approached from the standpoint of practical medicine. Indeed, it has seemed to me most natural to begin the study of mental disorders with the affections with which the general practitioner first comes in contact. For instance, no graduate of medicine practises long before he comes in contact with such an elementary phenomenon as delirium. A child has an attack of fever and the physician observes that it is confused, that it does not recognise its surroundings, that it cries out, that it shrinks, struggles, acts as though it heard strange sounds and saw strange objects. At the same time its restlessness, its cries, its broken and hurried words indicate that the cerebral activity, though perverted, is abnormally aroused. This picture, so familiar, is the picture of simple delirium. There are present illusions, hallucinations, confusion and hurry of thought, fleeting and fragmentary delusions, incoherence. We soon find that these elements are present in every form of delirium, no matter what its origin, and our first logical conclusion is that in these essential particulars all of the deliria are alike. It is perfectly true that some of the deliria present secondary features, dependent upon their causation, as in alcoholic delirium in which visual hallucinations predominate, and yet the fundamental symptoms are always the same. This is the case whether the delirium occurs in a young person or an old person, whether it be mild or whether it be furious.

The deliria naturally separate themselves into the febrile and afebrile forms. The febrile deliria are those which accompany the various acute infections, the exanthemata and the various acute visceral diseases, such as pneumonia. The afebrile deliria are those which are met with as sequelæ of various infectious diseases, as a result of various intoxications and after trauma or shock. Afebrile deliria, as is well known, every now and then ensue during the post-febrile period of one of the exanthemata, for example typhoid fever. As examples of afebrile deliria, due to intoxication, we may instance the deliria from alcohol and from lead.

Under the head of the febrile deliria, it is evident, we must also include, so-called *delirium grave*, or as it is variously

termed, acute delirium, typhomania, acute delirious mania, Bell's delirium. It is a delirium, very active, characterized by a febrile state, the rise of temperature being generally quite high, while there are not present any surface lesions such as are found in the exanthemata on the one hand, nor any signs of visceral involvement, such as pneumonia or meningitis, on the other. I do not desire at this place to enter into a discussion of delirium grave. Neither occasion nor time permits, but I do not hesitate to hazard the opinion that it is a disease due to a specific infection, the bacteria or toxins of which expend their action upon the brain without giving rise to lesions of the cutaneous surface or of the viscera, such as are met with in the exanthemata or acute visceral diseases. It is possible, of course, that delirium grave is an affection which is due to a variety of causes, but a detailed study of the facts will, I believe, negative such a view.

To repeat once more, the various deliria separate themselves into

First, Simple Febrile Delirium.

Second, Specific Febrile Delirium, (which is variously known as Bell's delirium, delirium grave, acute delirium¹, typhomania, and acute delirious mania.)

Third, Afebrile Delirium.

Delirium is essentially an acute mental confusion of relatively short duration—a few hours, a few days, or at most a week or two. Naturally the morbid state which is most closely allied to delirium is the one in which confusion is less active, but more prolonged. Such a state is found in the prolonged confusion which every now and then comes on in infectious diseases after fever has subsided. It is seen typically in the confusional insanity following typhoid fever, influenza, erysipelas, acute articular rheumatism, the puerperium, profound exhaustion, trauma, surgical shock, etc. Into its causation there enter especially two factors, first, the toxins of infection or other poisons, and secondly, profound and persistent exhaustion. Its symptoms do not differ in any essen-

¹All of the deliria are acute and the term acute delirium to designate a specific delirium, is, to say the least, unfortunate.

tial particulars from those of delirium save that they are less acute and the course of the disease far more prolonged. In confusional insanity—the *Amentia* of Meynert, the *Verwirrtheit* of other German writers—there is the same presence of illusions and hallucinations, the same marked confusion and incoherence, but cerebral activity is never aroused to the same high pitch, and while delirium lasts from a few hours to a few days or more, confusion may last two or three months or more. The various forms of confusion are closely allied to each other, just as are the deliria, and no sharp distinctions can be drawn between them. However, special forms may bear the impress of their causation. Thus a confusional insanity following typhoid fever presents a somewhat different clinical picture from the confusional insanity of alcohol or lead poisoning, and yet in all essential particulars they are identical.

Every now and then we meet with cases in which an infection, poisoning, or profoundly debilitating cause, is followed by mental confusion, but in which the confusion is tinged with dulness and hebetude, and in which little by little mental obtusion becomes more and more pronounced until finally the faculties are completely in abeyance. Such a case forms one of stupor or so-called stuporous insanity, or acute dementia. Simple stupor, as is well known, does not make its appearance suddenly. Generally there is a prodromal period of several days or weeks during which the patient suffers from more or less marked mental confusion, attended, it may be, with excitement or with depression. As in the beginning of confusional insanity, the patient at first suffers from insomnia, is worried and afraid and is unable to think clearly. Soon confusion makes its appearance. There is loss of the proper appreciation of the surroundings. As in confusion, the patient believes himself to be in a strange place and does not properly recognize the persons about him. He is also distinctly hallucinatory, and up to this point the case resembles one of confusional insanity without much excitement. Little by little mental obtusion, noticed in the beginning, becomes more and more marked, and soon the loss of the power to ap-

preciate the surroundings becomes so profound that the patient lies motionless in bed, oblivious to everything about him. There is now no longer confusion, but instead, a more or less complete suspension of mental action.

It would be out of place here to dwell further upon the symptoms of stupor. I wish merely to emphasize the fact that confusion and stupor are closely related clinical forms. It is indeed at times impossible to accurately characterize a given case. In the first place stupor may occur as an episode of confusional insanity, and secondly cases are met with which occupy such an intermediate position that we are obliged to term them cases of confusion with stupor or stuporous confusion. What is true of the inter-relation of confusion and stupor, is also true, I need hardly say, of the inter-relation of delirium and confusion. Every now and then it happens that a case beginning as a simple delirium merges into one of confusion, and it is also true that during the course of a confusional insanity, episodes of more or less active delirium may occur. Clearly, delirium, confusion and stupor are closely related clinical forms and they may be considered as constituting a group of mental affections by themselves, separate and distinct, as we will see, from other mental disorders. I will not here speculate as to the cause of delirium, confusion or stupor. A sufficient hint is afforded us in the clinical history. We have at once suggested to our minds the action of bacteria, of bacterial toxines and of other poisons upon the cortex. It is probable that in delirium we have especially and essentially such an action, while in confusion and stupor we have the added factor of exhaustion.

It is necessary finally in connection with delirium, confusion and stupor, to emphasize two important facts. The first is that in these affections the emotional state plays only a secondary and unimportant rôle. In delirium and confusional insanity, the emotional state is frequently one of fear and depression, though anger and exaltation may also be noted. The two phases of the emotions may occur as varying episodes in the course of the affection, or the emotions may be feebly or not at all aroused. As far as the emotions

can be studied in stupor, the same statements hold true. We must conclude, therefore, that the emotions bear no relation of significance to these affections and that for purposes of diagnosis and classification, the emotional state in delirium, confusion and stupor must be disregarded. To this fact which is of the greatest importance to the clearness of the interpretation of insanity, I will later return. The second point is that in this group of mental affections, heredity plays an unimportant and secondary rôle or no rôle at all. It is doubtless true that persons of a neurotic make-up, or of a neurotic ancestry become delirious and confused more readily than those of normal organization, but there is a striking difference in the history of heredity in this group, and in the group of affections which we will next consider.

In melancholia, mania and circular insanity, we have a group of affections which are most closely related. The identity of the etiology of melancholia and mania, the great rôle played by heredity (estimated by Kraepelin at 80%), the fact that both affections occur especially in persons of the emotional and excitable, the poetic and artistic temperament, that they both occur by preference in early adult life, that they both present similar prodromal factors, that each runs a course of gradual increase, maximum intensity and final subsidence, that each presents in its course a phase which is the complement of the other, that in each the emotional state dominates the entire picture, that they both tend in their individual attacks to recovery, that each tends to recur, that opposite phases of melancholia and mania are found in the same individual, and finally that cases are met with in which the elements of both phases are present at the same time (the so-called mixed form of Kraepelin), can leave no doubt in our minds as to the close relation between the two disorders. Indeed, I do not myself hesitate for a moment to fully accept the interpretation of Kraepelin, that they really constitute *one* affection. We can, I think, with perfect propriety, speak as does Kraepelin, of "Manisch-depressive Irresein." A simple mononym, expressive of this idea, is greatly to be desired.

That the melancholia-mania syndrome differs radically from the delirium-confusion-stupor syndrome, every thinking alienist will at once admit. It is not necessary, before this audience, to recite on the one hand, the symptoms of mania—to recall the expansive emotional state, the increased rapidity in the elimination of ideas, the abnormal increase of association, the absence of hallucinations, the fleeting expansive delusions and the physical restlessness; nor on the other hand is it necessary to recall the symptoms of melancholia with its emotional depression, its psychic inhibition, its depressive delusions, in order to show how widely the symptom-group of melancholia-mania differs from delirium, stupor and confusion. It is perfectly true, of course, that every now and then, delirium, confusion and stupor occur as episodes during the height of a mania or melancholia, but they are merely episodes and nothing more. They are to be looked upon as symptoms superimposed upon the mania or melancholia proper and dependent upon accidental or secondary causes, such, for example, as exhaustion. The melancholia-mania syndrome is distinguished by the great factor of heredity, the dominance of the emotional state, its wave-like course, its relative lucidity as compared with delirium and confusion, and by its tendency to recurrence.

In melancholia-mania, we have an affection in which phases of depression are frequently succeeded by phases of exaltation, and in which, while the tendency is to recovery from individual attacks, the disease repeats itself in recurring waves. In paranoia, on the other hand, we have, in the typical and completely developed form, a disease in which a phase of depression extending over many years is at length followed by a phase of expansion, likewise of many years' duration, the two phases together dominating a great part of the life of the individual and terminating not in recovery, but in an increasing dementia. In paranoia, as we most frequently see it, we find a history of prolonged mental depression and hypochondriasis, together with the gradual evolution of depressive delusions, especially delusions of persecution, and and after some years this condition is succeeded by an expan-

sive stage, the so-called transformation of the personality, and characterized by delusions, expansive in character. It is impossible to here discuss paranoia in any but the most general terms. I need not recall to your minds how greatly individual cases vary in their details, that some cases progress as far as the expansive stage, and that others still are incomplete in their development—perhaps have not been observed for sufficiently long periods—but notwithstanding, all cases of paranoia agree in this essential feature, namely in the existence of systematized delusions extending over many years. It is also out of place here to enter into a discussion of the various forms of paranoia, the simple typical hallucinatory form, the mystic form, the litigious form, or of the form termed by Magnan, the insanity of the degenerate. It is clear to me that these forms belong together, that they are well grouped under the one head, paranoia, and that we must assign to paranoia a definite place in our classification.

Clearly melancholia-mania and paranoia, no matter what their pathology, are to be regarded as degenerations, and when we look for an allied group of affections also degenerative in their nature, the neurasthenic insanities at once suggest themselves. The neurasthenic insanities are among the most interesting with which we have to deal, and it seems to me that a correct interpretation of every one of the forms is to be found in the study of simple neurasthenia itself. Nervous exhaustion is an affection which may supervene in individuals who are otherwise perfectly normal. It may result, as is well known, from unphysiological living, overwork, overstrain, and other factors which induce chronic exhaustion. It is an affection to which every one is liable, those of normal as well as those of pathological heredity. The symptoms of neurasthenia as ordinarily met with, are those of chronic fatigue, and I have upon various occasions applied to it the term of the *fatigue neurosis*. I need not dwell upon the various fatigue pains and aches, the motor weakness, nor upon the various visceral disturbances met with in this affection, but I will pass on at once to the consideration of the psychic phenomena. At the very outset of our inquiry we meet the symp-

tom of ready exhaustion—of marked diminution in the capacity for sustained intellectual effort. The attempt to do mental work brings on more or less rapidly the signs of fatigue. Soon there is difficulty in sustaining and concentrating the attention, and at the same time there is a marked diminution in the spontaneity of thought. When the condition is pronounced and confirmed, the patient becomes irritable, nervous, lacks confidence in himself, betrays indecision regarding trivial matters, and is often emotional to an unusual degree. His equilibrium is readily disturbed; a play at the theatre or a newspaper account of a murder may provoke him to tears, or a trivial incident may provoke him to unusual annoyance or anger. In other words, added to the symptom of ready exhaustion we have that of deficient inhibition. His lack of confidence in himself may grow into a feeling of timidity; a man forceful and aggressive loses the readiness with which he arrives at decisions, loses in will-power and may even become chronically afraid. Weakness, indecision and fear are closely associated, and it is not surprising that a man in a condition of chronic exhaustion should become morbidly afraid. How the fear of neurasthenia manifests itself, it is hardly necessary for me to point out in detail. It manifests itself in many ways. There may be present a vague generalized sense of being afraid, or there may be present isolated, spontaneous attacks of generalized fear—a fear accompanied by marked outward physical signs. In such attacks, the face becomes pale, the heart palpitates, the pulse is small and rapid, the respiration hurried, there may be a cold sweat upon the body, and the patient may sink from weakness upon a chair or upon the ground. Indeed, if the attack be intense, there may even be relaxation of the sphincters. In other cases the fear, instead of retaining a general character assumes a special form. If, in addition to being neurasthenic, the patient be also neuropathic, *i.e.*, if there be in him the elements of nervous degeneration, hereditary, congenital or acquired, some pathological association may be formed in the patient's mind, so that the emotion of fear becomes linked with certain relations to the environment. This

to my mind is the most probable explanation of the origin of the various phobias—agoraphobia, claustrophobia and the like. For their establishment, two factors appear to be necessary, neurasthenia and neuropathy. Persons otherwise normal who acquire neurasthenia, do not acquire the special fears.

A similar explanation applies also to the origin of *folie du doute*. The madness of doubt is in reality the insanity of indecision and I believe it to be a neuropathic exaggeration, so to speak, of the indecision which is normally seen in ordinary neurasthenics. That profound neuropathic elements, hereditary or acquired, are necessary for its formation, there can, I think, be no doubt. To me the term *insanity of indecision* appears to be better than *folie du doute* or obsession of indecision, and it is the one which I am in the habit of employing.

A somewhat similar explanation, I believe, applies to so-called insanity with irresistible impulse. That the inhibition of the neurasthenic is deficient, we have already seen, and that it should manifest itself in various bizarre and erratic forms in persons who are also of neuropathic organization, is not surprising. The normal brain is constantly eliminating impulses which are constantly restrained or diverted into special channels. In the neuropathic neurasthenic, these impulses are not only no longer restrained, but manifest themselves as pathological associations of movement in relation to the environment. To my mind, the term *insanity from deficient inhibition* is better than obsession, *Zwangsvorstellung*, imperative idea, or insanity with irresistible impulse. The pathological association which gives birth to the impulse, is formed in the same manner as are numerous other, often irrelevant, associations in the normal mind, but in the latter such associations are repressed or inhibited and give no outward manifestation of their existence, while in the neurasthenic neuropathic subject, they are given motor expression as rapidly as they are formed.

The psychic symptoms observed in the simple neurasthenia of non-neuropathic individuals offer also an explan-

ation of so-called aboulie insanity or as I prefer to call it, *insanity from deficient will*. The condition is closely allied to the insanity of indecision and is characterized by the inability of the patient to perform some special act or acts which are as a rule simple in themselves, and which are habitually performed by normal persons without hesitation and even subconsciously; *e.g.* the inability to rise from a chair, to walk forward or in a given direction, or to ascend a certain stairway, or perform some other act equally simple, but concerning which some pathological association has been formed.

The neurasthenic insanities, it is quite evident, constitute a well-defined group by themselves, the fourth in our scheme of classification. It is now necessary to add a fifth group consisting of dementia.

It is hardly necessary to detail the symptoms of simple dementia in order to justify its claim to a position in our nomenclology. There are present the signs, more or less pronounced, of mental loss, incapacity for ordinary mental work, lack of precision and clearness, errors in simple statement, in writing and in figures, impairment of memory, especially for recent events, together with attendant degeneration in habits, dress and conduct. Dementia may exist as a simple and uncomplicated condition and is sometimes seen in its pure and typical form in old age. More frequently it is attended by hallucinations and delusions as in the dementias of puberty, the dementia of paresis, of gross organic disease of the brain and in so-called terminal dementia. To these forms I will call attention in their proper places.

The five groups of mental affections which I have thus far considered, I regard as simple or elemental forms of insanity. They are:

- I. Delirium, confusion, stupor.
- II. Melancholia, mania, circular insanity, (melancholia-mania).
- III. Paranoia.
- IV. Neurasthenic Insanities.
- V. Dementia.

They all of them present distinctive features and if we

keep them clearly separated in our minds, the interpretation presented by the other phenomena of insanity becomes relatively easy.

We must next turn our attention to insanity as it is related to the various epochs of life; namely, infancy, puberty, early adult age, mature adult age, middle age and old age.

The first epoch, infancy, is that period of life which extends from birth to puberty. As is well known, insanity is but rarely met with during this epoch. We are all of us familiar, however, with the occurrence of delirium in children. Every general practitioner notes the occurrence of delirium in connection with the exanthemata and occasionally with fright and shock. It is noticed at such times that the child is illusional, hallucinatory and confused, and it may also manifest fragmentary delusions generally of a character associated with fear. Prolonged delirium may also be noted in children during the continuance of febrile affections, and delirium may also occur as a post-febrile manifestation just as it does in the adult. Prolonged deliria, either febrile or afebrile are, however, infrequent in children and in very young children quite rare. Long-continued mental confusion comparable to confusional insanity as it is found in the adult, is likewise rare. Stupor is met with, and in the experience of the writer, though rare, is somewhat more frequent than prolonged confusion. Other mental affections, such as melancholia, mania and paranoia are so rare as to be almost unknown. This fact doubtless bears a relation to the mental development of the child. Complex mental disorders are not yet possible, and certain it is that the influence of heredity does not make itself felt in a decided way until after puberty or adult life is reached. We can, however, every now and then detect in a child the elements of the melancholia-mania temperament. For instance, a child is unreasonably afraid, excessively shy, abnormally self-conscious, self-distrustful, preternaturally conscientious; perhaps it confesses imaginary sins or makes extravagant or premature religious protestations, or now and then manifests religious exaltation or excitement. Suicide in children, we may remark in passing,

does not bear the same relation to melancholia as it does in the adult. It more frequently results from fear of punishment, wounded pride, shame or cruel treatment. In some cases, however, no motive can be discovered, and it is possible that these are due to mental disease.

To briefly summarize, the epoch of infancy is characterized by a tendency to delirium, rarely to confusion or stupor. The melancholia-mania syndrome does not exist, and is represented, if at all, merely by peculiarities of conduct and temperament such as we have briefly outlined. Paranoia likewise does not exist. The neurasthenic insanities are met with extreme rarity. The dementias also are rare. It is hardly necessary before this association to draw the distinction between the insanities of infancy and idiocy and imbecility. Idiocy and imbecility are, roughly speaking, quantitative defects, are attended for the most part by gross morphological and pathological changes, and are not insanities. The insanities embrace changes in mental phenomena which are essentially qualitative, though they may also be quantitative.

When we turn to the period of puberty, we come to an epoch which to alienists is exceedingly interesting. We now have deliria both febrile and afebrile represented. We may also have confusion and stupor. Mania and melancholia are rare, though they become evident as adult life is approached. It is, however, the dementias of puberty that are of special interest. Indeed, they may be said to especially characterize this epoch of life. They may be grouped under the general term of precocious dementia or dementia præcox. The debt that we owe for their recognition to Hecker, to Kahlbaum, to Kraepelin, and to others, I cannot go into here. I can only briefly state my own interpretation. Dementia præcox is characterized by the symptoms of a dementia usually progressive, to which are added in a variable degree the elements of depression or exaltation, with fragmentary or more or less systematized delusions. It is a disease of slow progress. The initial changes consist of neurasthenoid symptoms with hypochondriacal and melancholic depression, of difficulty in performing the allotted tasks of school, and of

inability to acquire new ideas and to properly elaborate them. Inattention, indifference, absence of spontaneity, lack of interest, more or less rapid retrogression in class standing, next ensue. Gradually the thoughts become slow, disconnected and disordered. Illusions, hallucinations, transient delusions make their appearance, and now sudden flights from home or school force the attention of friends and relatives to the condition of the patient. It is not necessary to trace this familiar picture in its details, suffice it to say that as the dementia progresses, the elements of depression are gradually succeeded by those of expansion. The latter, especially in the younger patient, may be limited to causeless laughter, boisterous conduct, extravagant gestures or erotic manifestations. In other patients, especially in older ones, the expansive elements may be evidenced by expansive delusions, fragmentary or systematized. The depressive and expansive stages are frequently separated by well-marked periods of transition in which depressive and expansive elements are for a time commingled.

The various forms of dementia præcox separate themselves clinically into three forms; *first*, a dementia with the addition of elements of depression and expansion, the latter being on the whole ill-defined; *secondly*, a dementia with the addition of the elements of depression and expansion, the latter being more pronounced and better defined, together with special motor disturbances—convulsive phenomena, spasm of muscles, cataleptoid attitudes, automatism, etc.; and *third*, a dementia with marked and well-defined phases of depression and expansion together with well-formed delusions more or less systematized. To the first and second forms, Kahlbaum has applied the terms respectively of hebephrenia and katatonia, and to the third, Kraepelin has applied the term dementia paranoides. It is not always possible to draw sharp lines of distinction between the various forms; thus motor phenomena transient in character may be observed in a case otherwise deserving to be classed under hebephrenia, and slight degrees of automatism may be observed in cases otherwise coming under the head of dementia paranoides.

The differentiation, however, between the various forms holds good for the great mass of cases. As Pickett² has shown, in the younger cases, dementia præcox is apt to assume the form of hebephrenia; in those slightly older, the form of katatonia; and in those still older, the form of dementia paranoides. Let me emphasize again, that in all of these forms, in addition to the dementia, a wave of depression and of exaltation is present, though in hebephrenia the altitude of this wave may be limited. Its altitude becomes progressively greater as we pass through katatonia to dementia paranoides. The delusions also which are fragmentary in hebephrenia, still disconnected in katatonia, become finally more or less systematized in dementia paranoides. Doubtless this fact bears a direct relation to the greater intellectual development of the older patients.

The forms of insanity, therefore, which especially characterize the period of puberty are the precocious dementias:

Hebephrenia.

Katatonia.

Dementia paranoides.

When we turn our attention to the mental affections of early adult life, we may again, as in infancy and pubescence, meet with delirium, confusion and stupor. However, this period—the years from twenty to thirty—is essentially the period in which acute melancholia and acute mania are met with. It is the age of great depression and of great expansion, and this is not surprising when we consider the peculiar emotional and intellectual condition of this period of life—its hopes and fears, its poetry and illusions, its ideals and realities, its loves and disappointments.

It is perfectly true that a dementia præcox may be noted in early adult life, or that a life-long paranoia may have its inception at this period, and yet neither fact invalidates the statement that early adult life is especially the period of the melancholia-mania syndrome.

When we turn our attention to mature adult life, we find that while delirium, confusion and stupor may be met with,

²Journal of Nervous and Mental Disease, August, 1901.

and while mania and melancholia, especially its recurrent attacks, may be observed, the period of mature adult life is especially that of chronic delusional insanity—of paranoia. Under the term paranoia, I believe that we should include, as I have already stated, all the forms of systematized delusional insanity. To limit its conception as does Kraepelin to the insanity of the degenerates of Magnan, and to relegate all of the hallucinatory paranoias to the group of dementia paranoïdes, is to drive us into the absurdity of regarding as insanities of pubescence, cases beginning at thirty-five or forty-five years of age or later.

When we turn to the insanities of middle life, we find that the common form met with is a melancholia, and this melancholia differs in some particulars from the melancholia of early life. Mania, rarely, if ever, is met with in middle life, and Kraepelin, who employs the term "Manisch-depressive Irresein" for the melancholia-mania syndrome, reserves the term melancholia exclusively for this melancholia of later life. It is a melancholia which is of longer duration—many months or even several years—and offers a much less favorable prognosis.

The insanities of old age are well embraced under the term senile dementia. This senile dementia may resolve itself into several forms; first, simple mental loss, simple dementia; secondly, a dementia which is complicated with hallucinations and illusions and with delusions based upon them—in other words, a dementia with confusion; the confusion may at times give place to episodes of delirium or of stupor. Thirdly, the dementia may be complicated by delusions somewhat systematized and crudely resembling paranoia, so-called senile paranoia.

Thus far we have considered the subject of insanity from two points of view; first we have resolved insanity into its simple or elemental forms; secondly we have applied these forms in a consideration of the various epochs of life. It is now necessary in order to complete our conception of insanity to approach it from still another point of view, namely, that of internal medicine. We must consider the relation

which insanity bears to the various infectious diseases, the intoxications, the diatheses, the visceral diseases, the diseases of the nervous system, and to pregnancy, the puerperium and lactation.

When we turn our attention to the acute infectious diseases as represented by typhoid fever, influenza, pneumonia, etc., we find that the common forms of mental disorders associated with or following these affections are delirium, confusion and stupor. The chronic infectious diseases as represented by syphilis, tuberculosis, malaria and pellagra, are somewhat similar in their relation to insanity, though each presents important special symptoms. Thus, in recent syphilitic infection there may be delirium with excitement, though this is rare; confusion is equally so, while syphilitic somnolence or stupor is met with not infrequently. Chronic insanity, due to syphilitic lesions is excessively rare. However, in gross and extensive syphilitic lesions of the vessels and membranes, a dementia may ensue, but this in no way differs from dementia due to other coarse organic disease of the brain, such as tumor, chronic meningitis, etc. It in no way resembles paresis. In tuberculosis, the euphoria, so usually present, may be replaced by mental depression with suspicions of poisoning, distrust of relatives and friends, painful hallucinations and persecutory delusions. At times, though less frequently, the mental disturbances may assume the form of outspoken delirium or of pronounced confusion. In malarial insanity, we find represented delirium, confusion and much more frequently stupor; the latter resembles the post-febrile stupor of typhoid and other fevers, save that it is not infrequently associated with convulsions which may be epileptic or tetaniform. In chronic malaria there may be hebetude, confusion with depression, and there may be more or less marked dementia—so-called “malarial paresis” or “malarial pseudo-paresis.” In pellagra we are told that delirium, confusion and dementia obtain, especially the latter, and it is probable that these states are associated with painful delusions, as the patients frequently seek death by drowning.

In the insanities of intoxication: alcohol, lead, morphia

and cocaine, we again meet with mental disturbances in which delirium, confusion and stupor or dementia are represented in varying degrees. For example, alcoholic insanity is separable first into alcoholic delirium, so-called delirium tremens; second, alcoholic confusion, so-called alcoholic confusional insanity; third, alcoholic stuporous insanity or alcoholic dementia. The alcoholic dementias, we may say in passing, are separable into simple alcoholic dementia, alcoholic dementia with systematized delusions (so-called alcoholic paranoia) and alcoholic dementia resembling paresis. Thus:

Delirium (delirium tremens).

Confusion (alcoholic confusional insanity).

Stuporous insanity (alcoholic dementia).

Simple alcoholic dementia.

Alcoholic dementia with systematized delusions (alcoholic paranoia).

Alcoholic dementia resembling paresis (alcoholic paresis).

Similar facts are presented by lead. There is a lead delirium and confusion and a lead dementia. Lead dementia again resembles alcoholic dementia in that it presents forms resembling crudely paranoia and paresis. I will not take time to pursue this parallelism into the mental disturbances caused by morphia and cocaine. Suffice it to say that if the abuse of these drugs has gone so far as to produce insanity, the latter manifests itself in the form of deliria, confusions and dementias. It need hardly be added that various special symptoms, dependent upon the poison which has been taken, are generally present. Thus in alcoholic delirium there is a marked predominance of visual hallucinations; in morphia and opium, of hallucinations of both sight and hearing; and in cocaine, of hallucinations of the cutaneous sensibility.

When we consider the diathetic diseases, rheumatism, gout and diabetes, we find that the type of mental disorder presented is again that of delirium, confusion and stupor. Delirium and confusion are especially noted in relation to gout, and the delusions are as a rule of a depressive and painful character. In diabetes it is confusion and especially stupor which may eventuate in diabetic coma, which characterizes the clinical picture.

In malignant disease and the grave visceral diseases, we again find that the picture is that of delirium and confusion, and at times of mental loss. The confusion, it must be added, is dominated by depressive and painful delusions and hallucinations. Of this, the insanity occasionally observed in connection with Bright's disease, is a good example.

The diseases of the nervous system are conveniently separated into the organic and functional diseases. With a single exception, organic diseases of the brain and cord are rarely accompanied by mental disturbances, and if the latter do make their appearance they present as a rule the symptoms of gross organic dementia. The exception, however, is most important and refers to paresis. In paresis we have a wasting or degenerative disease of the brain closely allied to the degeneration of the cord and nerves in locomotor ataxia. Paresis is indeed nothing more nor less than tabes of the brain. I need not speak here of its symptoms, of its initial wave of depression, of its later wave of expansion, and of its progressive mental deterioration. I wish merely here to emphasize its position in our scheme of classification as an organic nervous disease attended by mental symptoms.

Functional nervous diseases are not infrequently complicated by mental disorders. We need cite only the familiar insanities met with in epilepsy. Delirium, often sudden and violent, may occur during an epileptic attack or may supplant it, constituting in the latter instance the so-called psychic or larvated epilepsy. At times confusion replaces the delirium, and at other times stupor may occur. How epilepsy, if long-continued, may eventuate in dementia, we also know. When we turn our attention to hysteria, we again call to mind the occurrence of delirium and confusion during hysterical attacks, while stupor, so-called hysterical coma, is also a familiar picture. Every now and then in bad and long-standing cases of hysteria, more or less marked mental degeneration, characterized by distressing and painful visceral illusions, may be noted. The patient complains of endless ailments; makes round after round among physicians, insists upon unnecessary examinations and repeated surgical interference, craves

sympathy, is only satisfied when she is under a physician's care,—in short, her mental depression, visceral hallucinations and the delusions based upon them, lead her to make illness the business of her life.

Insanity is rather a rare complication of other functional nervous affections. Thus, chorea is rarely complicated by delirium or confusion; at times painful hallucinations and delusions are present.

When we turn to pregnancy, the puerperium and lactation, we again meet with mental disorders which are to be relegated to the group of delirium, confusion and stupor. If the mental disturbance of pregnancy approaches actual insanity, we note mental weakness, distressing hallucinations and painful delusions based upon the latter. In the insanities of the puerperium, we note delirium (mis-called puerperal mania), confusion and stupor. The mental disorders of lactation on the other hand resemble the less active form of mental confusion with depressive delusions met with during pregnancy.

The above brief résumé of the relation of the various visceral and general diseases and states to mental disorders is, of course, very imperfect. I am aware that in such a cursory review, an outline only can be given. It is sufficient, however, to justify a number of important conclusions.

First:—All of the mental disorders which result from the infections, the intoxications, the diatheses, the visceral diseases, the diseases of the nervous system, pregnancy, the puerperium and lactation,—in short from all of the diseases and morbid physiological states,—belong to the symptom-group of delirium-confusion-stupor-dementia. How closely related the various forms of this group are, we have already seen. Indeed, delirium, confusion and stupor are largely interchangeable terms possessing a certain degree of equivalence, and it must depend largely upon the activity of the morbid process as well as upon its character as to which of these forms is present in a given case. That secondary differences of symptoms, dependent upon the nature of the infection or

the special poison that has been ingested, are present, goes without saying, but these differences in no way affect the truth of the general statement.

Second:—The melancholia-mania syndrome bears no relation to the various infections, intoxications or visceral diseases. Neither mania nor melancholia ever results from them. Mania and melancholia are diseases primarily of the nervous system,—*neuroses* so to speak,—and are largely hereditary.

Much confusion has arisen from the loose and unscientific use of the words mania and melancholia, and in this respect alienists, neurologists and general practitioners have alike been guilty. To speak of a delirium as a mania because it happens to be attended by excitement, is certainly a gross misuse of terms and cannot be too strongly condemned. To designate a confusional insanity as a melancholia, merely because the delusions are distressing or painful, is equally unscientific and reprehensible. To say that a melancholia is caused by typhoid fever or that acute mania is caused by the abuse of alcohol, is to utter nonsense. Mania and melancholia are phases of a special syndrome which bears no relation to such causes. When a mania or melancholia actually occurs in a person who has suffered from such causes, the relation is to be regarded as accidental, or at most that the antecedent disease allowed the neurosis to become manifest, but was not itself a cause. I venture further to say that such coincidences are of the utmost rarity. Again, the relation of the internal medical diseases to paranoia is of like nature. Thus, we often speak of an alcoholic paranoia. The truth doubtless is that alcohol of itself can never cause paranoia; but on the other hand, it is probable that in persons already paranoiac by organization, the alcohol causing mental degeneration brings the paranoiac weakness to the surface; and this is no doubt also true of the action of other poisons. To conclude, melancholia-mania and paranoia,—as well as the neurasthenic-neuropathic insanities,—bear no relation to internal diseases. All causes, however, that are attended by persistent depression of nutrition or by degenerative changes in the nervous system, may favor their onset. The rarity of a clini-

cal history of a case of melancholia-mania even presenting such a relationship, is of sufficient significance.

Third:—The delirium-confusion-stupor syndrome may occur at all ages. Melancholia-mania and paranoia on the other hand are related to definite periods of life.

Fourth:—The delirium-confusion-stupor syndrome usually occurs independently; its forms may, however, occur as complications or episodes in any of the other affections.³

DISCUSSION.

Dr. J. H. Lloyd thought it was very evident that there was great dissatisfaction with our existing system of classifying insanity. As far as he could gather, Dr. Dercum was somewhat in accord with the expressed views of Kraepelin in putting mania and melancholia in one group of insanities. Kraepelin has recently expressed the conviction that mania and melancholia, if Dr. Lloyd did not mistake his expression, should be united and he even called it a maniaco-melancholic insanity. Dr. Lloyd thought with our present dearth of knowledge of true insanities it is perhaps somewhat premature to advance to this extreme position, because clinically the two diseases certainly seem to be very distinct, and yet all of us must have seen instances in which mania and melancholia alternate, or

"In this connection we must bear in mind that the quiet and fixation of extreme melancholia attonita, so-called stuporous melancholia, must not be confounded with simple stupor. Simple stupor is an outgrowth and accentuation of confusion. "Stuporous melancholia" or melancholia attonita on the other hand, is not stuporous confusion, but a condition of extreme motor inhibition or akinesia, and is to be regarded as an accentuation merely of the general psychic inhibition of simple melancholia. The history of a given case will at once enable us to differentiate between this so-called melancholic stupor and simple stupor. We have ordinarily the history of a melancholia gradually deepening into one of greater and greater quiet until at last absolute immobility is reached. In true stupor we always have a history of preceding confusion extending over a number of days or weeks. Occasionally also symptoms are present which enable us to differentiate between the two conditions. Thus, in simple stupor there are every now and then evidences of confusion which occur as episodes in the course of the affection. In "melancholic stupor" on the other hand there are not infrequently observed automatism, cataleptoid attitudes and occasional outbreaks of melancholic agitation; the facies also present at times striking differences from those observed in simple stupor. However, a differentiation from the symptoms alone should not always be attempted.

It would be wise, in the interest of clearness, to avoid the use of such terms as stuporous melancholia, substituting therefor the expression melancholia attonita already in use, or better still to speak of melancholia with extreme akinesia.

in which one patient will at one time have maniacal symptoms and at another depressive symptoms, and in more chronic cases the disease may often assume that form known as the circular insanity, in which maniacal exaltation and depression alternate; the patient swings around the circle at long intervals. The one point he wished to make is that the so-called psychoses are often based upon a degenerative type. They are essentially seen in the hereditary and neurotic patients. In the old form of classification, especially the one which we derived from the Germans as represented by Krafft-Ebing, the psychoses are separated from the degenerative insanities. Dr. Lloyd had long been convinced there is some error in this. He had seen these so-called psychoses breaking out in the most distinct neurotic forms of insanity in patients who have in every way the hereditary stigmata.

Dr. Knapp said he was very glad that Dr. Dercum had gotten so far toward the position that he (Dr. Knapp) advocated two years ago before this society. Dr. Knapp was disposed to agree with Dr. Dercum very closely in the main outlines of his paper. Perhaps the only question that might come up would be in this maniacal-depressive insanity. Certainly many of the cases which are ordinarily spoken of clinically as either melancholia or as mania, as Dr. Dercum had hinted in his paper, might much more properly be put under the type of confusion, and certain others on more careful study would be brought into closer relation either with neurasthenic conditions in some of the cases of mental depression or with true paranoiac conditions. We are laboring under a very great disadvantage in our classification of insanity in that we have no definite and accepted clinical scheme of insanity on which to work. As we all know, all of us who have ever written a book on nervous diseases, or expect to write one, would agree in the fundamental methods of examining in cases of paralysis, anesthesia, etc., but neither Morselli, who has made the most complete attempt toward embodying in a text-book the clinical methods of examination in mental disorders, nor Ferrari, nor Kraepelin has given any absolute and generally accepted method of examination in mental affections. We must, furthermore, Dr. Knapp believed, hold just as definitely in the so-called mental disease, that is, those diseases of the brain in which the higher psychical functions are more involved, to the same rule we have in other diseases of the brain, namely, that the symptoms depend primarily upon the location of the lesion and only secondarily upon the actual pathological process. With that in view, if we establish some definite clinical scheme, if we hold to that fun-

damental rule which we hold in all diseases of the brain, Dr. Knapp though we shall get a more definitely established basis for our classification of the so-called mental diseases. In putting dementia as a separate group he thought we must acknowledge that dementia is invariably a terminal process—the result of some active process which for a time puts the association neurones of the cortex more or less completely out of function, a process from which the patient may recover, or which may be fatal, but which in either case is hardly a disease of itself, but the result of some of the other forms of mental disease.

He was also indisposed to agree fully with Dr. Dercum in his view that paranoiac conditions, or that conditions other than those of confusion and stupor, conditions of more definite intellectual disturbance, of delusions fairly well systematized, may not be the result of active intoxication as from alcohol. He thought we can recognize a definite alcoholic condition of systematized delusions and hallucinations untended with confusion or stupor which is a temporary phenomenon passing away in a comparatively few weeks or months. Those cases are much less common than cases of confusion and stupor due to alcohol. In other respects, however, he thought we are indebted to Dr. Dercum for his very excellent classification, and in the main it is one to which Dr. Knapp would agree.

Dr. Mills said that the time was too short to discuss this paper, and he wished only to say with Dr. Knapp that he felt we are indebted to Dr. Dercum for his presentation of the subject, and also that while he, Dr. Mills, would concur with many of the points Dr. Dercum made in this paper, he would be inclined to differ with regard to some of them. He was not prepared to accept the idea that, at least clinically, melancholia and mania are to be included under the same group, agreeing in this respect with Dr. Lloyd, but he believed that Dr. Dercum's classification is a useful one, especially for students.

Dr. Fisher said he could not agree with this classification because he had not thought that a clinical classification is one we wanted. He believed that one based rather on the Krafft-Ebing idea is really the most easy to understand,—a most difficult subject anyway to enter into. His distinctions of pathological conditions and non-pathological conditions, and grouping of cases under each one of those heads, and of the fully developed brain and the partly developed, are more practicable. When we attempt a clinical classification we begin to differ at once.

Dr. Fisher did not believe that mania and melancholia

should be so closely united. In one there is almost no mental action, while in mania there is a rapid succession of ideas. In melancholia there is that painful condition of one or two ideas which causes tedium and tendency to suicide. Clinically these conditions seem different, and we know nothing of the pathology of the affections. They are probably dependent on some nutritional disorders. Most men differ on clinical points, and a classification of insanity on a clinical basis would lead to infinite confusion.

Dr. Dercum regarded the clinical classification as the clearest possible classification. As to including mania and melancholia in the same group when they occur in the same person, he did not see how we can escape from the clinical evidence that they are one and the same disease.

As regards Dr. Knapp's criticism of dementia, whatever we may think of dementia as a terminal stage it is met clinically and must have a place in a clinical classification. Furthermore, it is not always produced by other diseases, and we may have uncomplicated senile dementia.

In regard to paranoia, Dr. Dercum did not believe poisons ever produced systematized delusional insanity. If a man is paranoiac by nature and structure the destructive influences to which he may subject himself are factors which may develop that paranoia, but that is not saying that alcohol specifically produces paranoia. Dr. Dercum did not think alcohol causes paranoia directly; though it is one of many factors which may bring about paranoia in a person paranoiac by nature.

DISLOCATION OF THE SEVENTH CERVICAL VERTEBRA;
CLINICAL HISTORY OF A CASE; REMARKS.*

By FRANK R. FRY, A.M., M.D.,

PROFESSOR OF DISEASES OF THE NERVOUS SYSTEM, MEDICAL
DEPARTMENT OF WASHINGTON UNIVERSITY, ST. LOUIS, MO.

H. B., 37 years of age, single, farmer by profession, of unusually good physique (six feet tall, of proportionate weight), in perfect health, free from any suspicion of alcohol, lues or a cachexia of any kind.

The following account of the accident and of the clinical history prior to our own observation was obtained from the patient and his relatives (all well-educated, cultured persons).

June 16, 1900, he was sitting in a hammock, his feet hanging over one side; one of the suspending cords parted and he was thrown with great force so that he turned a complete back somersault, striking on his neck and shoulders. When reached by members of the family he was perfectly conscious but quite helpless, unable to move the lower portion of his body at all, and his arms only feebly. He was stunned by the fall but he did not think that he totally lost consciousness. He could not have been long on the ground for he had been seen in the house at 11.30 A.M., and was found in his injured condition a few minutes after 12 o'clock.

It was asserted by the patient and others that the portion of the hammock occupied by him at the time of the fall could not have been more than 25 to 30 inches from the ground. He could not explain how or why he turned a somersault in this short fall, but as evidence, cited the fact that after the fall he lay with his legs extended in an exactly opposite direction from the one they were in before he fell.

He was carried six miles in a wagon and 35 miles by the train to the city, and from the railroad station by ambulance to St. Luke's Hospital, reaching this destination at 7 P.M. Considering the patient's condition, this whole journey was accomplished with comparatively slight discomfort and fatigue.

When he reached the hospital his temperature was 99.4°, pulse 60, respiration 16, sensorium perfectly clear. He complained only of paresthesia and of slight pain in the back of his neck and shoulders and ulnar sides of both arms.

*Read by title before the American Neurological Association, June, 1901.

I first saw the patient on the morning following the injury (July 17), in consultation with other physicians and surgeons. A serious accident to the cord at the seventh cervical segment was readily made out, the patient's condition corresponding exactly to the usual diagrammatic pictures of a shut-off lesion at this point, viz.: complete anesthesia of all portions of the body below the line of the 3rd rib and of the ulnar sides of the arms, a hyperesthetic area immediately above the anesthetic one, and complete paralysis of motion below this point, including the bladder and bowel. The reflexes, both superficial and deep, were absent. No plantar reflex could be obtained on the first examination. Two days later, however, the Babinski sign was faintly present.

On two occasions the neck was thoroughly and systematically examined in the presence of a number of physicians. Forcible traction was made, and with and without traction, the head was manipulated in all possible directions. During these movements the cervical and upper dorsal vertebræ were carefully palpated, but no sign of crepitation, increased mobility, or displacement of any of the vertebral processes could be discovered. The examinations did not cause much pain. When the traction or the movements became extreme he complained of a warm, tingling sensation which radiated through the neck and shoulders and down the ulnar sides of the arms to the fingers. Sometimes in moving him, *e.g.*, in lifting and turning his shoulders, this tingling paresthesia became exaggerated until it amounted to actual pain; and was sometimes accompanied by a "sinking feeling," as he expressed it.

He moved his arms quite freely. They were weak generally rather than in any particular segment. The inclination to abduct them and rest them on the pillows to the side was evident. The chin was thrown slightly forward, the head having the appearance of being retracted. There was no stiffness, however, to be detected in the cervical muscles.

He entered the hospital on the evening of the 16th and died on the 24th at one o'clock A.M. The following is a condensed record of the temperature, pulse and respiration during this time:

Date	Temperature		Pulse		Respiration	
	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.
16th		99.4		60		16
16th		101		58		16
17th	102.	102.	70	85	20	34
18th	103.	102.	88	74	34	24
19th	101.	101.	70	60	24	20

DISLOCATION OF SEVENTH CERVICAL VERTEBRA. 517

20th	100.6	100.	58	58	20	20
21st	99.4	100.4	58	60	20	20
22nd	100.4	101.2	62	70	20	20
23rd	101.	102.4	60	72	20	20

The clinical record contains little of moment beyond what has already been mentioned. After the 18th pain crises of considerable severity began to come in the arms. These members became progressively weaker until finally he was unable to move them and they had to be frequently lifted about on the pillows by the nurses. He was also frequently nauseated after the 18th, and vomited several times after the 20th. Bed-sores were troublesome, occurring with slightest provocation.

During the evening of the 23rd it was noticed that his pulse was very bad at frequent intervals. He died suddenly and quietly at one o'clock A.M. on the 24th.

A post-mortem examination made a few hours after death showed that there had been a dislocation forward of the seventh vertebra. The supra-spinous ligament, which seemed to have been an unusually strong and well-defined structure in this instance, was snapped in two half way between the spines of the seventh cervical and first dorsal vertebræ. The fracture of it was abrupt, a break rather than a tear. Compared to this the violence to other ligaments and muscles seemed slight. The anterior common ligament was not entirely severed, but had been pushed forward and torn. It was in process of rapid repair by an inflammatory exudate. The dislocation was complete, both articular processes having slipped in front of their fellows of the first dorsal. There was no fracturing of either bone, only a slight grinding of the anterior edge of the body of the first dorsal.

The cord was evidently somewhat softened and attenuated at the site of compression. There was no bulging of the membranes above or below this point, and no hemorrhage or inflammatory exudation outside of them. They were not opened. The body had been filled with embalming fluid before the autopsy, and as there was little probability of a satisfactory microscopical examination, the specimen with the cord *in situ* was therefore preserved until all who were especially interested had had an opportunity to see it.

Dr. Robert J. Terry, Professor of Anatomy in Washington University, kindly studied with me the comparative liability of the seventh cervical vertebra to dislocation; and, for reasons which I will not stop here to enumerate, he thinks it more liable to an accident of this kind than any vertebra be-

tween the 2nd cervical and 10th dorsal. The spine of the 1st dorsal dropping as it does, leaves between it and the 7th cervical a relatively long span for the supra-spinous ligament, making it more liable to part at this point, especially during a strain from extreme flexion.

An X-ray examination was, unfortunately, impracticable. The surgeons in the case felt that they had been able to make an unusually thorough and satisfactory manipulation, and that inasmuch as two neurologists present thought a hematomyelia probable, an incision and exploration were not warranted. The writer advocated an incision as the only means of obtaining positive information about the condition of the vertebræ at the site of the cord-lesion. The consultation at which these deliberations occurred was twenty hours after the accident, leaving in this case little reason why an incision should be insisted upon. Hence we simply "saved an exception," which is herewith recorded because it helps to impress an important lesson, namely, the difficulty of diagnosing fractures and dislocations in any of the regions of the vertebral column, and the necessity of resorting to all possible means of investigation in order to establish a diagnosis.

THREE CASES OF HEREDITARY CHOREA.*

BY C. EUGENE RIGGS, A.M., M.D.,
ST. PAUL, MINNESOTA.

Cases of Huntington's chorea are always of scientific interest even though they may present no distinctively novel features. One of my cases, Miss E., has been under my observation for over seven years. The progress of the disease has been slow but very perceptible. Miss E. is 42 years of age, Canadian, a stenographer by occupation. The present illness began ten years ago, following an attack of nervous prostration occasioned by a broken engagement on the eve of marriage. Immediately preceding the appearance of the chorea, and during all the time succeeding she has been troubled with dyspepsia accompanied with marked flatulency. Miss E's. nutritive condition is fair, although her appetite is poor. She has a pulse of 90 and her respiration ranges from 14 to 30 per minute. At times there is observed a spasmodic catching of the breath. If at all fatigued, there is marked incoördination of walking. Romberg's symptom, decided; superficial reflexes normal; deep, exaggerated; slight ankle-clonus. Coördination for fine movements is very bad; this is especially noticeable in her work as a stenographer and typewriter, making longer hours on her part a necessity. Motility not up to the normal; no involvement of sensibility; sleep is poor. Mental reflexes are sluggish; memory as to past and present, bad; at times despondent; untidy in personal appearance and dress. The choreic movements extend over the entire body, there is constant grimacing; all the movements can for a time be very greatly controlled by a strong effort of the will, the reaction from which, however, results in their exaggeration.

The hereditary feature in this case is most interesting. Miss E.'s great grandfather was affected with the disease as were five of his children, including her grandmother. Her mother and three aunts suffered from it, two uncles escaping. In her mother it appeared some time between forty and forty-five years; her mind began to be affected at about fifty, increasing to complete dementia; she died at the age of fifty-eight. During the last two years of her life she was obliged to remain on the floor and eat from a sheet spread there, because she was unable to sit on a chair or lie on a bed.

*Read by title before the American Neurological Association, June, 1901.

The disease has appeared in two of Miss E.'s sisters though they are at present in a less advanced stage. One sister, Mrs. H., whom I have had the opportunity of seeing, is constantly grimacing, with uneasiness and choreic movements of the extremities. Mrs. H. is troubled with the same dyspeptic symptoms which have characterized her sister's condition. It is noticeable throughout all the ramifications of this family that there is a marked neurotic element even when the chorea is not present. A short time ago, Mrs. H. brought her daughter, suffering from adolescent insanity, to consult me. A brother in a distant state is very eccentric.

The second patient, Mary F., is 30 years of age, of Irish parentage. She has three sisters and a brother who as yet show no evidence of the disease. The father suffered from hereditary chorea for five years previous to his death, which resulted from grippe. The present trouble began when she was 28 years of age, two weeks after the death of a sister for whom she had helped to care. At the beginning of her illness she was affected with palpitation of the heart and dyspepsia, the flatulency being very distressing. Her nutritive condition is poor; pulse 92, respiration jerky and irregular. Motility is good; there is a slight Romberg; superficial reflexes, normal; deep, exaggerated; incoördination of the upper extremities, unable to sew or hold a dish. Sensibility normal. Speech is jerky, especially so when excited or is attempted at the end of inspiration, breaking the word to permit another breath. Sleep is very poor except under hypnotics, when not more than four or five hours of sleep can be obtained.

In this case the mental symptoms preceded, or at least were contemporary with, the physical ones. At the onset of her trouble she was with a brother in Montana, and came from there to Minnesota. She says her brother sent her here, but her family say she ran away. After coming to Minnesota she again disappeared and was not found by her friends for a year. While apparently not meaning to lie, she is not truthful. She is sluggish mentally; if replying immediately to a question, she usually makes a mistake, of which she will be, however, conscious. The same untidiness of dress is observed in this woman as in the preceding one. The choreic movements are about the same in character and extent as with Miss E., the grimacing being perhaps a trifle more pronounced.

Mr. C., aged 37, American, laborer. In 1893 it was first noticed that he acted queerly, also that there were twitchings of the right occipito-frontalis and corrugator supercilii muscles. He left home and wandered for a year. Upon his re-

turn the mental condition was very apparent, taking the form of melancholia, and he was placed in an asylum where he remained for a year. His present mental condition is one of quiet dementia.

Recent examination shows nutrition to be poor, as is also digestion; pulse 90, respiration 20, weight 127 pounds; normal weight 171 pounds. Urine is normal but greatly diminished in quantity; there is weakness of the sphincter so that there is a constant dribbling. There is no Romberg; deep and superficial reflexes both exaggerated. Motility fair; slight incoördination in both upper and lower extremities. Sensibility normal. Pupils dilated; reaction to light, normal; accommodation sluggish. Speech hesitating; incoördinate movements of the tongue and muscles of deglutition as if swallowing. Sleep good. The rythmical contractions of the occipito-frontalis and corrugator supercilii muscles are more pronounced on the right side; there are irregular contractions of the orbicularis palpebrarum. There are clonic contractions of the diaphragm, rythmical clonic movements of the depressors of the chin, and at times clonic contractions of the muscles of both arms and humeral muscles of the right side. On rising from a chair, the patient has to balance himself before commencing to walk, when his attitude is similar to that of Parkinson's disease; his gait is shuffling and his steps irregular in length.

The disease appeared in the father of this man at a considerably later period of life than in the son, the mental symptoms coming on six years after its inception. For a year before death there was difficulty in swallowing, and if excited speech became hesitating. At this time also he developed a mask-like face. Nine years after the onset of the chorea he wandered from home, froze his feet and died from gangrene.

It will be observed that the characteristic gait is not present in any of these cases, while the classical "tripod," heredity, insidious onset, and mental impairment is noticed in all of them, though the latter symptom is only incipient in Miss E. Mental stress or shock preceded the onset of the disease in the two women. This is also known to have been the case in most of those members of Miss E.'s family who have suffered from it.

NEW YORK NEUROLOGICAL SOCIETY.

May 7, 1901.

The President, Dr. Joseph Collins, in the chair.

A CASE OF SUCCESSFUL MORAL TREATMENT OF A
FORM OF HYSTERIA.

Dr. Mary Putnam Jacobi reported this case. The patient was a woman, aged twenty-four years, belonging to a neurotic family. Her symptoms had begun by endometritis and uterine retroflexion four years before she came under observation. She had been subjected to a good deal of local treatment, including curettage and an Alexander's operation. The latter procedure had relieved the dysmenorrhea, but had been followed by a fixed pain in the abdomen not increased by pressure. She said that she was unable to walk or stand because of the severe pain produced in the back and abdomen. Examination showed no motor inability, and when she started to walk she could do so very readily and energetically. The uterine disease had entirely disappeared. She was moderately anemic and quite constipated. Dr. Jacobi said that at some portion of the cerebro-spinal tract an area of nerve tissue must be so nearly on the border of exhaustion that an attempt at function carried it beyond this line. It was conceivable that with the exhaustion of the cerebral center the very thought of the movement would be followed by pain. According to Sanier, such hysterical pains point to a partial anesthesia in the brain. Apart from the intermittent pains excited by the sense of walking, there seemed to be a permanent and distressful sense of need of support in the back. In a previous experience Dr. Jacobi had succeeded in making a bed-ridden patient walk within a week by the application of a Taylor spinal brace. This simple device had given great relief. The necessary nerve stimulus had been secured by the application of static electricity. This remedy seemed to be almost a specific for hysterical pains. The subject of the present report had been persuaded to leave her home and take a room near Dr. Jacobi's office. At first, it was not difficult to get her to walk a portion of a block, but when she was asked to walk a whole block she obstinately refused. All sorts of changes in treatment and methods of management were necessary in order to conquer the patient's wilfulness, as this was essential to further progress. Her mode of life for each day was mapped out most minutely. By the most persistent and painstaking efforts exerted

for a period of four months the patient was finally conquered. During the last eighteen months she had been living a fairly normal life. Dr. Jacobi said that in hysterics the habitual dependence upon fellow minds is immensely intensified. To get rid of a false idea it must be starved out and atrophied by an entire lack of support from the minds of those around the patient. The essential element of the treatment of this case was the bringing of the patient under the control of another mind.

Dr. B. Sachs commended the general plan of treatment described in this paper, though admitting that it required far too much expenditure of time and attention to detail to make it generally available.

Dr. Ira Van Gieson expressed his admiration for the report just presented, for, he said, it was indicative of the time when psychological cases would be treated less by medicine and more by psychology. This case afforded an example of what could and should be done in hundreds and thousands of other similar cases. He had been particularly impressed with the statement made concerning the necessity for causing an atrophy of each false idea—the reverse of the process by which the hysterical condition is induced. He thought the period of treatment in the case reported might perhaps have been materially reduced by suggestive therapeutics.

Dr. Jacobi said that the objection made to the treatment on the score of its time-consuming nature was hardly sufficient to condemn it. She had seen a number of cases that had gone from one physician to another without benefit, although doubtless physicians generally were well acquainted with the principles which should underlie the successful treatment of such cases.

THE MORBID ANATOMY OF A CASE OF PROGRESSIVE ATROPHY WHICH WAS CLINICALLY ONE OF AMYOTROPHIC LATERAL SCLEROSIS.

Dr. Carlin Philips read this paper. He said that the patient was a woman of thirty-six who had come under Dr. Collins' observation for the first time on June 17, 1897. She had then complained of severe frontal headache, inability to lift the head from the pillow without the help of the hands, tremulousness of the hands, and easily-produced fatigue. She had lost thirty pounds. Examination showed atrophy of the supraspinatus and of the right shoulder girdle, and fibrillary twitches were detected in these muscles. The kneejerks were increased; there was ankle-clonus on both sides; there was no affection of the special senses. Six months later she had complained of dyspnea and had shown loss of will power and suicidal impulses, together with some difficulty in swallowing. The atrophy of the muscles was more marked, and extended to the trapezius muscle. She began about this

time to have attacks of major hysteria, and the atrophy increased rapidly. The gait became spastic and the body rigid. She had the use of her limbs up to about six weeks before death on May 25, 1899.

An autopsy was allowed only upon the brain and spinal cord. The weight of the body was forty-eight pounds. The meninges of the brain were anemic. The brain was normal in gross appearance, as was also the spinal cord. The latter was carefully segmented and prepared in various ways for examination. In the second servical segment was a concentric zone encircling each anterior horn and involving the anterior mesial and anterior lateral portions of the fundamental columns, while the tracts of Gowers and the pyramidal tracts were left intact. Corresponding to the degenerated areas in this segment the neuroglial proliferation was very slight. The fourth cervical segment showed a sinking in of the periphery just at the margins of the anterior roots, and this change of contour extended down several segments. The gray matter extended laterally, giving a sickle-shape to the degenerated area. The most striking feature was the extensive destruction of the cells. The fifth cervical segment was practically the same as the fourth. The sixth segment showed a tongue-shaped area of degeneration extending almost to the posterior horn. In the seventh segment the anterior roots showed more marked degeneration. From the first to the fourth dorsal segments inclusive there was a zone of degeneration encircling the anterior horns, and becoming less intense until almost invisible in the fourth segment. The disappearance of the motor cells throughout these four segments was more difficult to determine than in the case of the cervical segments, but apparently there was about the same amount of atrophy of these cells. From the fifth to the eighth segments there appeared to be an increase in the neuroglial tissue. From the twelfth dorsal down to the end of the cord the area occupied the peripheral portion of the ventral half of the cord, and extended around to a point opposite the apex of the lateral horn, where it expanded into a lateral mass. The lumbar and sacral regions were found to be as severely involved as the cervical. Throughout the cord the blood vessels were apparently normal. Nissl preparations of the medulla showed small areas of periarteritis with small-cell infiltration of the adjacent gray matter. The anterior roots were found to be atrophic. The crossed pyramidal tracts were apparently unchanged.

PHILADELPHIA NEUROLOGICAL SOCIETY.

March 25, 1901.

The President, Dr. James Tyson, in the chair.

Dr. F. X. Dercum presented a case of epiphysitis.

Dr. A. R. Moulton reported the case of an insane man who had died from the fracture of an exceedingly thin skull.

Dr. A. Gordon read a paper on the rôle of infection and intoxication in diseases of the spinal cord.

Dr. William G. Spiller said that neuro-pathologists acknowledged that many diseases of the nervous system were of infectious origin. He doubted, however, whether amyotrophic lateral sclerosis or Friedreich's ataxia were due to infection. In examining some specimens of disseminated sclerosis he had found evidences of inflammation in distinct round-cell infiltration within the sclerotic areas. He doubted whether the changes found in the spinal cord in intense anemia were of inflammatory nature. He had examined the specimens from at least four cases of this disease, and he regarded the alteration of the central nervous system as possibly the result of auto-intoxication. Investigators have shown that micro-organisms even when injected into the spinal canal may entirely disappear from the cord within a few days. The absence of bacteria at necropsy is no proof that bacteria have not been present within the nervous tissues during the life of the individual.

Dr. F. X. Dercum remarked that neurologists were all impressed with the general truth of this position of Dr. Gordon. Dr. Gordon did not imply that there were no diseases of the nervous system that were not due to infection. It is certain that diseases called degenerative may be due to the direct action of a toxine on the neurones. Dr. Dercum thought that all could recall cases of diseases of the nervous system in which the symptoms followed an infection. He referred to three children in one family, who had become high-grade imbeciles after measles, the attacks not being associated with symptoms of meningitis. The fourth child which escaped the measles also escaped the mental deterioration. The inference was therefore logical that the condition in the three other children was due to measles. He had also shown to the Society many years ago a man with extensive muscular atrophy following gonorrhea.

Dr. F. S. Pearce spoke of the importance of the rôle which poisons, mineral or bacterial, hence also auto-intoxicants, play in diseases of the nervous system—not alone of the spinal cord. He had already, in a paper read before the College of Physicians, expressed his views as to the effect of toxines on the nervous system in general, and particularly in inducing certain neurasthenias; and in cases in which the toxemia is recovered from the neurasthenia gradually passes away. It is also well known that the exacerbations of epilepsy in many cases are connected with intestinal intoxication. He had seen great improvement in some cases in which the intestinal tract was particularly treated by antisepsis. In many so-called functional diseases the circulation of toxines is undoubtedly the cause of the symptoms. When the toxemia disappears, the nervous system if not too

profoundly affected, will recover its proper function, but when the alteration is profound, there may be areas of softening and degeneration.

Dr. C. S. Potts presented a case of disseminated sclerosis in which hemiplegia had been of the ascending type.

Dr. William G. Spiller said that this case resembled the one reported by Dr. C. K. Mills and the one that he himself had reported, but in some of its features it was different. The age of the patient was different. In Dr. Mills' case the patient was a man 45 to 50 years of age. In his own case, the patient was 39 or 40 years old, the disease having begun three or four years previously. In reporting his case he had said that while he did not exclude disseminated sclerosis, yet in four years there should have been some more definite symptoms of the disease, such as diplopia, nystagmus, scanning speech or intention tremor. The symptoms which Dr. Potts had mentioned, made Dr. Potts' case probably one of disseminated sclerosis.

Dr. F.X. Dercum regarded the case as one of extreme interest. The diplopia and nystagmus left no doubt as to its character. He had never seen anything like it before.

Dr. W. Pickett read a paper on von Bechterew's scapulo-humeral reflex.

Dr. Alfred Gordon said that Dr. Pickett had mentioned that in the majority of cases by striking the inner border of the scapula, abduction with flexion is produced. In the speaker's experience, when the inferior angle of the scapula is struck there is produced almost constantly abduction with flexion. When about the middle of the inner border is struck, abduction with rotation externally occurs.

With regard to the value of this symptom, he was in accord with Dr. Pickett. He referred to three cases in which he had found diminution of the reflex on one side as compared with that on the other. The first case was one of acute ascending paralysis with no atrophy. The second case was one of sciatica, the patient was normal as far as the upper extremities were concerned. The third case was one of tuberculosis with involvement of the apex of one lung. There was diminution of the reflex on the affected side. As far as he had been able to make out there was no atrophy.

He had not found the reflex a very constant one, and thought that not much reliance could be placed upon it, although in some cases of disease in the cervical portion of the cord it may be of value.

Dr. William G. Spiller said that this reflex had not been thoroughly studied in normal individuals. If it is always present in normal individuals, its absence in disease of the spinal cord may be of value in determining focal lesions in the upper portion of the cervical swelling. Dr. Pickett had said that he had found the reflex absent in a large number of cases of hemiplegia. Dr. Spiller asked whether the other reflexes especially those in the upper limb on the hemiplegic side were much exaggerated? If they were, he should have expected that the von Bechterew reflex would also have been exaggerated.

He referred to a case of phthisis reported to the Society by Dr. Van Epps in which the Babinski reflex was present. The spinal cord and brain had been given to him for examination by Dr. C. K. Mills, and Dr. Spiller had not found any alteration of the pyramidal tract.

He had recently seen two cases in which the knee-jerk was exaggerated, one of disseminated sclerosis and the other one of brain tumor or internal hydrocephalus, in which the Babinski reflex was not present. In both cases lesion of the pyramidal tract was indicated.

Dr. F. X. Dercum said that there might be modification of the von Bechterew reflex in functional states. No one would intimate that there was necessarily an organic lesion where there was a change in the knee-jerk. He believed that the future would show that the von Bechterew reflex had a certain amount of value. When there is degeneration high up in the cervical cord the reflex will be found to be exaggerated. Whether it be present or absent may depend upon the extent and position of the lesion.

Dr. William Pickett said in reply to Dr. Spiller's question, that the hemiplegics in whom the von Bechterew reflex was absent, as a rule did not show great exaggeration of the other reflexes. He attributed its absence in these cases to the extreme rigidity and muscular atrophy. In the early stages in doubtful cases the von Bechterew symptom might be of value.

D. Moses Behrend read a paper on the biceps tendon jerk in tabes.

Dr. D. J. McCarthy said that when he had read Frenkel's paper, he had not been able to see why the biceps reflex should not be present. Cases of tabes are usually of the dorso-lumbar type.

With regard to the von Bechterew reflex, he did not see any reason for treating it as a separate reflex. It is really composed of two or three minor reflexes, and there are other symptoms whereby disease in the upper part of the cord can be localised.

CHICAGO NEUROLOGICAL SOCIETY.

April 3, 1901.

Dr. Hugh T. Patrick in the chair.

A joint meeting for the discussion of the subject of epilepsy was held with the Chicago Medical Society.

THE DEFINITION, PATHOLOGY AND SYMPTOMATOLOGY OF EPILEPSY.

Dr. Elbert Wing read a paper on this subject. After a discussion of the various definitions of epilepsy, the following conclusions were drawn:

First, That impairment or loss of consciousness is the fundamental phenomenon in a paroxysm of epilepsy.

Second, That convulsions of a purposeless type may, or may not, accompany the disturbance of consciousness.

Third, These phenomena must not be due to active brain disease, blood states, reflex irritation, or primary failure of the heart's action; that is to say, it is possible to distinguish attacks of idiopathic epilepsy from attacks which closely simulate epilepsy, but which occur in connection with other diseases.

Dr. Wing discussed the symptomatology under two heads, a first and second stage. The first stage included the general disturbance of health and the various forms of auræ. The second stage was divided into the period of convulsions and that of post-epileptic coma.

Of the minor forms of epilepsy, or petit mal, there is every variety from a momentary arrest of consciousness to the varied phenomena of double consciousness. It is not a matter of great consequence whether a given symptom is called an aura, or a so-called psychic equivalent constitutes the entire seizure.

Mention was made of the fact that migraine is supposed to have a close relation to epilepsy. Krafft-Ebing's statement is generally accepted, namely, "I do not know a single case in which simple migraine could be clinically related to epilepsy."

Under the head of the pathological histology of epilepsy, Dr. Wing made mention of the claim of Chaslin and Féré that a peculiar cortical gliosis is characteristic of epilepsy. Bevan-Lewis claims characteristic vacuolation and degeneration of the large cells of the second layer. Kazowski and Van Gieson have recently confirmed both claims.

Most of those who deny the significance of these findings are not histologists. Ohlmacher has found a persistent thymus and enlarged lymphatic glands. In discussing the general pathology the speaker made mention of the fact that histological changes may increase irritability and make the transmission of the nerve force uncertain and irregular. The perversion of some secretions, *e.g.*, that of the thymus, may both induce these histologic changes and excite the perverted functional activity which constitutes the paroxysm of epilepsy. Many central and peripheral irritant agents from the toxins to phimosia may also excite the attacks.

Whether an attack shall be one of grand mal, ordinary petit mal, or of double consciousness, depends more upon the site of the cerebral lesion than upon the nature of the exciting cause. If the action of the Rolandic area predominates, the fit is a major attack; if the higher centers are most active, it is somnambulistic.

Dr. Harold N. Moyer spoke of the diagnosis and varieties of epilepsy as ordinarily recognized. Epilepsy is easily identified when the convulsive attack is typical. Unfortunately the family physician often, and the consultant almost invariably, relies upon the description of people who are not physicians for the sequence of events in the seizure. Epilepsy is a symptom-complex, but unlike chorea and other symptomatic disorders of the nervous system, any of the features which make up the attack may be absent in a particular case. The definition of epilepsy by Donath seems to be as satisfactory as any so far proposed: "An abnormal excitement of the cerebral cortex which increases suddenly, is periodical in its manifestations, has a typical course and disappears rapidly. Whether the attack occurs without unconsciousness and amnesia, depends upon the strength and extent of the irritation." The speaker made mention of the fact that grand mal and petit mal are but gradations of the same condition. Jacksonian epilepsy is not clearly demarkated from other forms, but it is commonly understood to mean those attacks which begin in a limited area of the cortex and extend by continuity. The greatest difficulty in the diagnosis of epilepsy is caused by the so-called equivalent, which may be simply a psychical state marked by automatic acts, or alterations in the emotional or dream states. The so-called auræ consist in alterations in the sensory perceptions. Epileptiform seizures which occur in general paralysis of the insane, offer very little difficulty in diagnosis, as the signs of somatic disturbance are usually pronounced. Uremic convulsions may occasionally present every symptom found in the epileptic type.

A very unfortunate combination of words is that known as hystero-epilepsy. These are cases of hysteria and not epilepsy. They are distinguished from true epileptic attacks by the absence of an initial cry, by the movements being at least coördinate if not purposive in character, by the tongue not being bitten, and the patients not injuring themselves.

In conclusion, emphasis was laid upon the importance of the early recognition of epilepsy. In too many instances the family physician shrinks from the diagnosis, and not infrequently the family are advised that a single convulsion, even though it may have all the epi-

leptic characters, is due to a disturbance of the stomach, or constipation, or other trivial cause, or if it occurs in a child, that the condition will be outgrown. This leads to a false sense of security and to a failure of early treatment in this disease at a time when it is curable.

Dr. Sanger Brown spoke of the hereditary, mental and allied states, including psychical epilepsy. Heredity may be divided into similar and dissimilar. Similar heredity implies the existence of epilepsy in ascendants, while dissimilar heredity refers to such ancestral diseases as insanity and imbecility. Authors do not agree as to what disease should be included in the list of dissimilar hereditary influences. Some include tuberculosis, migraine and hysteria. All agree that insanity and imbecility are by far the most important factors. The speaker referred to similar heredity as more often transmitted through the mother, and that the heritage prefers the sex of the parent from which it was derived.

The psychic or mental manifestations were divided into those momentarily preceding or terminating in other phenomena, those extending over a period ranging from a few minutes to a few days prior to the seizure, those which alone comprise the individual attack, and those which are the result of the fits either momentarily or remotely, and finally, a class of cases in which the mental disease or disorder is of such a nature that it might be more properly regarded as an association with, rather than an expression of, epilepsy. Of the first class, the most common are those which momentarily precede the fit, and fairly constitute the mental or psychic aura. Dr. Brown referred to cases where a familiar environment seemed strange, or again, where the surroundings seemed a repetition, or at least, peculiarly familiar. Other conditions were mentioned such as vague fear, confusion, anger, revenge, joy amounting sometimes almost to a mental or psychic orgasm. These changes which precede the seizure for a variable period are properly regarded as premonitions. They commonly consist of marked irritability, depression, violent explosions of temper, indecency, untruthfulness, or a sense of mental exhilaration and joyousness, rapidly progressing to maniacal confusion and frenzy. Doubtless transitory frenzy might constitute a valid defence for homicide if the defendant were known to suffer from epilepsy, whether the frenzy had been previously known to have been related to the fit in point of time or not.

Dr. Daniel R. Brower discussed the treatment of epilepsy. Especial stress was laid upon the prophylaxis, since epileptics are well known to have unstable nervous systems. They should be relieved of all mental and physical strain during adolescence. Every attention to hygiene should be given, including particular attention to all forms of excretion. Bromides were mentioned as holding the first rank in treatment, but a word of caution not to produce bromism was given. When the bromides fail to stop the seizure the speaker advised the additional use of chloral at bedtime. Reference was made to acetanilid as an adjuvant to the bromides. The speaker opposed the use of the opium-bromide treatment, and strongly favored the withdrawal of salt. Attention to intestinal antisepsis and to blood conditions as they arose, was earnestly advised. If epilepsy is essentially a disease of cell bodies, of cortical neurones, all surgical operation are unscientific. The colony system is the highest ideal for the treatment of these unfortunates. The proof of this is overwhelming in results obtained both at home and abroad.

Dr. Maximilian Herzog spoke of the general pathology and

special histopathology of epilepsy, rehearsing the various theories and hypotheses which have been advanced concerning this affection.

Dr. Sydney Kuh said that in his hands the withdrawal of salt was negative entirely in its effect upon epilepsy. He agreed with Dr. Brower as to the opium-bromide treatment, and favored the bromide of strontium.

Dr. Jacob Frank spoke briefly upon the surgical treatment of epilepsy, emphasizing the necessity for thorough exploration of the skull if any operation were attempted.

Dr. Henry Gradle dwelt upon reflex epilepsy of peripheral origin, and mentioned two or three interesting cases.

Dr. Frederick Leusman narrated the case of a young man, a confirmed masturbator, in whom epilepsy complicated by hemorrhoids developed. The hemorrhoids were removed, and the vena dorsalis penis exsected for about an inch on each side, with the result of cessation of the epileptic seizures.

Dr. L. Harrison Mettler emphasized the importance of making an early diagnosis.

Dr. Julius Grinker alluded to the prevention of marriage among epileptics. He favored the use of opium and borax in the treatment of selected cases.

Periscope.

CLINICAL NEUROLOGY.

THEORIE NEURONIQUE DE L' HYSTERIE ET TRAITEMENT DE CETTE NEVROSE D' APRÈS LA MÉTHODE DE PIERRE JANET (Ncuron Theory of Hysteria and Treatment by Janet Method). M. P. Gallois. (Bull. gen. de. Therapeutique, 1901, March 23).

The history is that of a girl of eighteen, who was suffering from an aggravated form of hysteria. There was acute pain in the back, a complete paralysis of the inferior extremities, and a total anaesthesia affecting all four limbs. The case presented a marked superficial resemblance to one of Pott's disease. The least attempt at movement caused severe dorso-lumbar pain. This was the condition of the patient in June 1899. The history of the case, given by the patient herself, was as follows: In 1894 she suffered greatly from head pain, being at the time *pensionnaire* in a convent. For this trouble she was removed to the country, and essayed several times to return to the convent life. She left the institution for the last time in November, 1898, and at this time was suffering from disordered movements of the right arm and leg, and from spasmodic contraction of the levator palpebræ superiors. From this time the condition became more and more aggravated, until she presented the clinical picture already described. Having come under the care of the author, he determined to treat the case by the method recommended by P. Janet. This method is based on the assumption that in all these cases there is some fixed and controlling idea which dominates the will power of the patient, and renders her, so to speak, more or less an automaton. Just as sometimes occurs with those who are greatly preoccupied, the influence of music may be absolutely without effect, and indeed, may pass unnoticed, so in the same way with these patients. Under the overwhelming predominance of the fixed emotion, the matters of everyday life are of no account, and are not even perceived. The first proceeding is, then, to ascertain the nature of the fixed idea which is dominating the patient's activities. The next step is to take measures in order to suppress this governing emotion or idea. A long and particular account of the method adopted in this case follows, but it is clearly a question of gaining the confidence of the patient, and really presents no new features. It appears that very considerable success followed this treatment, and at the time of writing the symptoms were in a fair way of disappearing altogether. But we should not be surprised to learn that they had returned, and that in the relapse the patient was in all respects as bad as ever.

JELLIFFE.

SCIÉROSES EN PLAQUES AYANT DÉBUTÉ DANS L'ENFANCE (Multiple Sclerosis in Childhood). Bourneville. (Le Progrès Médical, May 26, 1900).

The author remarks that at the Bicêtre in twenty years only four cases of disseminated sclerosis in children were recorded, which is a clear proof that the malady very seldom occurs during childhood. The history of one of these cases is here recorded. The family history, as might have been anticipated, shows an extremely neurotic

character, and there was a marked history of tuberculosis. At the age of three the child had a severe fright, followed by an epileptic attack. On recovering the trembling of the hands and general weakness were first observed, and remained permanently. A detailed history follows, from which it appears that the definite symptoms of multiple sclerosis became more and more marked, and at the same time mental weakness also developed, so that at the age of nineteen or twenty a definite slight imbecility was present. Epileptic attacks also occurred from time to time, and the patient, although capable of learning to a certain extent, was never in a position to perform the regular duties of a trade. The account is most full and complete, and forms a valuable record of a rare condition. JELLIFFE.

HYPERTHERMIE HYSTERIQUE (Hysterical Hyperthermia). J. Rendu. (Lyon Médical, 1900, No. 3).

The paper reports a very carefully-observed case where hyperthermia, without hyperpyrexia, lasted for several days. The patient was a young lady, aged 21, physically well developed, of pleasing appearance, and given to great attention to dress and toilet. She was, it appears, of a romantic disposition. She talked about having exophthalmic goitre, but a doctor, she admitted, had made use of the term when examining her throat; the thyroid was slightly enlarged, and she seemed to make her eyes appear prominent. When 17, acute tuberculosis was suspected, and a year or two later a similar attack, with high temperature, occurred, and disappeared at a pilgrimage. After being in good health for a year she fainted at dessert, and for two days afterwards suffered from vomiting and diarrhoea. The temperature was carefully watched for a week, three thermometers were used, being always placed in the rectum. The period came on at this time. The temperature repeatedly exceeded 43° C. (109.4° F.), but oscillated in a strange manner. On the fourth day it was in the morning 99.5° in the evening 109.4° ; two days later it touched 110° ; three days later it marked 108° in the morning and fell to 98.4° in the evening. The skin never felt intensely and pungently hot as in pneumonia and eruptive fevers; perspiration was free, and the pulse rapid. There was no physical or other evidence of tubercle or typhoid fever. After dropping suddenly at the end of a week the temperature rose two days later to 105° through excitement at a visit from a friend, and then fell to normal permanently. JELLIFFE.

ETIOLOGY OF CHOREA MINOR. T. Frolich. (Norsk. Mag. F. Laeger, 1900, Sept., p. 901).

This paper deals with 47 cases of chorea minor treated during seven years in the hospital of the University of Christiania. The age of the patients varied from 3 to 16 years, and in 28 of them the disease had begun from seven to eleven years previously; 39 were girls and 8 boys. In 24 cases there was the family history of rheumatism or of psychical affections. Among the 47 patients there were 15 who had had rheumatic fever, either before or during the chorea, and in 16 (34 per cent.) the chorea had begun or had been accompanied by febrile phenomena with angina, articular affections, or erythema nodosum. In these 31 cases the author recognises the element of infection; in 4 others the chorea had undoubtedly followed infectious diseases, such as scarlet fever and influenza, and in the remaining 12 instances there was some slight evidence or possibility

of infection. It is therefore claimed that in 80.85 per cent. of the cases the element of infection was definitely proved. Frolich specially refers to an interesting case in which the patient was first attacked with gonorrheal vulvo-vaginitis, then with chorea, with endocarditis, and finally with monoarticular gonorrheal rheumatism.

JELLIFFE.

COFFEE AND THE NERVOUS SYSTEM. W. M. Leszynsky. (Medical Record, 1900, Dec.).

Maintains that ill-effects following the use of coffee are by no means uncommon. Much of the present-day nervousness, he attributes to its immoderate use. The symptoms complained of are: General headache and nervousness; apprehension regarding the future; mental depression and irritability; insomnia or restless sleep; bad dreams; sudden awakenings; vertigo; general tremulousness; diminished muscular power; precordial oppression; cardiac palpitation; loss of appetite; frequent eructation and constipation. Objective symptoms in addition are: Coated and tremulous tongue; tremor in eyelids, when standing with closed eyes; in some dilated pupils; tremor in outstretched hands; rapid pulse of low tension and frequently irregular, ranging from 90 to 130; exaggerated reflexes and a varying amount of reflex irritability. For the treatment of the condition it is wise to limit the patient to one cup of coffee in the morning and the substitution of one of the newer cereal coffees. A useful mixture, to be used as a sedative is the following: Sodium bromide, gr. xv.; liq. potassi arsenitis m. ii.; tinct. gentianal comp., dr. ss.; ext. kolae fl. m. xv. At the end of five or six weeks the bromide should be discontinued, and tonic pills, containing arsenic, quinine and strychnine taken. Recovery should follow in from three to six months.

JELLIFFE.

VIE SEXUELLE, MARIAGE ET DESCENDANCE D'UN EPILEPTIC (Sexual Life, Marriage, and Posterity of an Epileptic). Bourneville and Poulard. (Le progress medical, Sept. 29, 1900).

These authors conclude an extensive record in the following summary: 1. The epileptic did not have a highly neuropathic ancestry. His paternal grandfather drank to excess as also did a cousin who became insane in consequence. His mother was nervous and had sick headaches. One brother is backward. 2. At the age of 13 years, without apparent cause, he had his first attack of epilepsy. The interval was about a week after the disease became confirmed, and the patient's character became irritable. Gradually the character became profoundly changed, the attacks were followed by transient aphasia, and periods of maniacal excitement supervened. 3. The attacks caused various traumatism and hemorrhages, such as contusions of the ear and malar prominence; open wounds of the outer orbit and ear; contusions of the eye and forehead; open wounds of the lip and chin; bitten tongue; temporary deafness and neuralgia; many others of trauma accompanied by hemorrhage may be mentioned, such as ecchymosis of the conjunctiva; hemorrhages from the ear and mouth, etc., etc. 4. Everything pointed to the fact that the case was one of typical epilepsy. The character of the patient underwent progressive alteration for the worse. The general health likewise failed, and the patient gradually assumed the look and bearing of an epileptic. He had eight children and wife was then pregnant with the ninth. Two children died of marasmus and one of cholera infantum. None of these then had spasms. One of the sur-

living children is very nervous and choleric, and has had mild attacks of convulsions confined to the eyes. Another child who had three attacks of convulsions, hallucinations and vertigo, died of diphtheria. Still another had night terrors, but otherwise was well. There was one miscarriage, due probably to a fall. The authors think the preceding record of progeny should be a sufficient deterrent from marriage of an epileptic.

CLARK.

NEW CRANIECTOMY INSTRUMENTS. L. Gigli. (Centralbl. f. Chir., Dec. 1, 1900).

The author claims the following advantages for his new craniectomy set: Simplicity, asepsis, rapidity, certainty and universal application. It comprises a special boring mill, curved hollow sound with traveling hook on a wire running in its center, and a thread carrier. The borer consists of a large, deeply-corrugated, horizontally-placed handle for the left hand to grasp. Through the body of this handle passes a short shaft horizontally and at right angles to the same. On this shaft plays a cogged pinion with the usual handle for turning it. The shaft which carries the drill is vertical to the foregoing, and at its top has a small wheel meshing with the drive wheel. The depth of the hole is fixed by an adjustable guard whose face is across the axis of the drill. The cleanest and most rapidly-drilled holes are given by the ordinary carpenters' auger-bit with a central screw center, and two lateral cutters. The diameter of the holes is best four to six millimeters. The curve of the sound is such that it can be passed through such a hole, between the dura and the bone and the position of its point is estimated from the direction and place of its handle. A little beyond this point the next hole is to be drilled. The thread-carrier is made of two small curved, hollow shafts opposed to each other along their long axis, and hinged at two places. At their center is a device by which the points may be separated or approximated, and at the end of the shank is the handle which fastens off the thread. This starts down one shaft out of its point, across to and into the point of the other, and so back to the handle. With the thread in position when the points are separated, it passes straight across the interval and where it is easy of access by the traveling hook of the hollow sound. Through the second hole the thread-carrier is therefore passed and opened. The hook soon finds the thread and pulls it through the first hole with the wire saw following. Then the cut through the bone is made. The rapidity and very slight loss of substance of the bone commend it greatly.

JELLIFFE.

HEILUNG EINES FALLES VON EPILEPTISCHEN IRRSINN (Recovery in a Case of Epileptic Insanity). Edmond Rose. (Deutsch. Med. Wochens., Oct. 18, 1900).

The patient was a strong boy; parents, brothers and sisters all healthy with the exception that the mother had epileptic attacks from childhood. Her own ancestry however, was not neuropathic. A year or two before the date of narration, the patient received a blow on the forehead. The boy who had always been perfectly well, had a convulsion a few days after this accident. The attacks were repeated with great frequency, and in six months the patient who was but six years old at the time, appeared to have lost his intellect. He became violent and destructive and had as many as eight daily attacks. On admittance to the Bethany Hospital, he showed his com-

plete abeyance of intellect by passing urine and feces in bed, etc. His attention could not be aroused. He would not look at pictures handed him, but immediately destroyed them. He was speechless. The patient was trephined in the seat of the old scar. The latter was not adherent, and there was no anomaly on the inner side of the inner table. The outer surface of the dura was unchanged. It was opened and the brain was seen to be sound. There was no escape of cerebro-spinal fluid. A hypodermic needle was thrust into the brain, but no foreign body or collection of fluid could be reached. The wound was therefore closed. No operative reaction followed. The patient appeared to be benefited by the operation. He often went over a week without an epileptic attack, and as he continued to improve, Rose recommended his return to his family, where after several months, the boy was completely restored to sanity and attended school. Rose is certain that it was not a case of hysteria, and that the aperture may have acted as a safety-valve. CLARK.

LEHRE VON DEN ALKOHOLISCHEN AUGENMUSKELLÄHMUNGEN (Contribution to the Theory of Alcoholic Ocular Palsies). E. Raiman. (Jahrbücher für Psychiatrie und Neurologie, Vol. 20, No. 1, 1901, p. 36).

The ophthalmoplegias of alcoholics can be thought of as arising in two ways: first, through an affection of the ocular nerve, that is a neuritis, as part of an alcoholic multiple neuritis. This form is rare. Second, the pathological process can be localised in the territory of the nuclei of the ocular muscles or in their neighborhood. In so far as this process is to be considered as an inflammation, it is known as poli-encephalitis superior (Wernecke). This form can be acute, chronic, subacute, with a prognosis always doubtful. The differentiation of these two forms may be very difficult, or even impossible, especially when it is considered that a peripheral and a central process may coexist. In an alcoholic, where symptoms of a bilateral abducens paresis and reactionless pupils were present, the autopsy showed the following changes: hemorrhagic process limited strictly to the central grey of the posterior portion of the third ventricle, aqueduct of Sylvius, and the fourth ventricle. The process can be called acute hemorrhagic poli-encephalitis superior. Although only twenty-three cases of this disease, with accompanied ocular symptoms in alcoholics have thus far been described, the author believes that they are by far more common. Although the clinical variations are numerous, yet the occurrence of a trias, mental symptoms, ocular muscle paralysis and polyneuritis are found sufficiently often to be regarded as more or less typical. The author closes the article with the following summary of his views on the subject: If more attention is given to the study of the ocular paralyses of alcoholics, the number of cured cases of poli-encephalitis superior will be found increased. The occurrence of ocular paralyses among alcoholics is much greater than is commonly supposed. The paralysis can have a practical and differential diagnostic value. In most cases, if not in all, the ocular paralyses of drinkers are to be regarded as due to processes of central origin. SCHWAB.

THE SELECTIVE ACTION OF TOXINS ON NERVOUS TISSUES. F. Mott. (Lancet, Jan. 26, 1901).

Dr. Mott says that what is spoken of as the "new neurology"

does not involve merely an acceptance of the neuron theory, but a recognition of the fact that every cell possesses a bio-chemical sensitiveness to its lymph environment, termed chemotaxis. The essential cause of a class of diseases of the nervous system which includes functional disorders and primary degenerations, is the failure of the neuron to carry on the processes of assimilation and dissimulation, which are essential for the well-being of every cell; and the alteration of the environment consists in many cases of the presence of some form of poison.

One peculiarity about primary intoxications and degenerations is that, as a rule, they are symmetrical, and are related to the functions of groups, systems, and communities of neurons. They are occasioned directly or indirectly by some general toxic condition of the blood or lymph, but although the toxic substance circulating in the blood must come in contact with all the neurons equally, yet in a great number of instances particular groups of neurons, subserving special functions, are especially, and indeed not infrequently, solely affected by particular poisons. It is this selective action of certain poisons which impress a clinical picture that enables one to recognise the cause of the disease by the character of the symptoms. As illustrations of this one may cite tetanus and rabies and the effects of the chemical poison strychnine. There are, however, a great number of diseases of the nervous system in which toxic agents are not the sole cause, in which poisons circulating in the blood act rather as contributory, predisposing, or exciting causes in persons with a neuropathic or psychopathic heredity, or in persons who have subjected their nervous systems to excessive functional activity or stress. Thus in a majority of cases three factors are in operation which together form a vicious circle—toxemia, stress, and hereditary neurosis or psychosis.

The poisons by which disease of the nervous system may be produced, either directly by their selective action on certain groups of neurons or indirectly by their injurious effect on neurons whose excitability has been lowered by their having been exposed to stress or from their being hereditarily feeble, are of considerable variety. They may either be introduced into the body from without or they may be produced within—be either exogenous or endogenous. In either case it is the toxic state of the blood or lymph which causes the morbid nervous phenomena, but the symptoms which arise depend upon conditions of either increased excitability or depressed excitability of the nervous elements which are selected by the poison. Which nervous elements are picked out, and the direction in which they are affected, depends in the one case (a) upon the selective influence of the poison on particular nervous structures, and this is dependent upon the chemical properties of the poison itself. In this case, therefore, the poison has a specific effect. In the other case (b) however, the poison selects particular structures in the nervous system owing to an inherited or acquired low potential of these nervous elements, or an instability of their protoplasm.

Of the extrinsic causes of nervous and mental disease the abuse of alcohol is the most widespread and potent, for at least 20 per cent. of the inmates of the London County asylums are suffering directly from the effects of the abuse of alcohol; but the list of the exogenous poisons is a long one. The poisons formed within the body (auto-genetic) by which the nervous system may be affected, may be produced (1) by the perverted functions of the organs or tissues, (2) by the action of micro-organisms upon the living fluids and tissues

of the body. Even certain normal constituents of the blood may accumulate in excess, and toxic environment of the neuron may supervene, as for example in uremia and Graves' disease. In the process of digestion a number of toxic albumoses and other substances are produced which, although normal enough in their proper place, are abnormal in the blood. By the vital action of the living epithelium of the alimentary canal and by the bio-chemical processes occurring in the liver, these substances are usually kept out of the systemic circulation. If, however, these structures are prevented by any cause from performing their normal function, toxic conditions of the blood may arise and be a source of morbid nervous phenomena.

Again, from defective metabolism abnormal substances may be found in the blood, and may be associated with various nervous disturbances. The very term "melancholia," indicates the importance which has long been attached to the liver as an organ, the derangement of which causes nervous depression. The delirium, coma, and other symptoms occurring in acute yellow atrophy of the liver demonstrate the important part played by this organ in maintaining constant the normal quality of the blood. Again in diabetic coma we have an example of auto-intoxication, while in certain grave anemias the degenerative changes found in the spinal cord are due not so much to the defect in the red corpuscles as to some toxic agent absorbed with the portal blood which not only leads to hæmolysis, but acts as a poison upon those nervous structures which are found in a state of degeneration.

A certain number of cases of puerperal insanity are due to septic blood-poisoning in psychopathic or neuropathic individuals, and the nervous phenomena connected with other infections are familiar to all. The best examples of selective actions of microbial toxins are afforded by rabies and tetanus, but the toxin of diphtheria may also be cited, and the tendency of syphilis to select certain areas of the nervous system is well known. We have then to recognise that poisons introduced into the blood stream, and thus into the lymph by which the tissues are fed, do not merely cause a generalised interference with the functions of the nervous system, but have a selective action, so that each poison tends to fall with especial force upon certain special groups or families of neurons; and that this selection is in some cases specific to the individual poison, while in some it is due rather to the tendency of the poison to fall upon such weakly neurons as have been enfeebled by stress or by hereditary taint. To this we would add that the action of these poisons appears sometimes to be limited to disturbance of function, while it sometimes leads to definite changes such as the neuritis; and further that it is very probable that even where the effect of the poison is so slight as not to give rise to obvious symptoms at the time, the final effect may be that degenerative changes may occur in the areas of nervous tissue which had been picked out by the poison at a far earlier date than would otherwise have been the case. In this way perhaps, we may explain the relation between certain system degenerations of the nervous system, such as those producing ataxy and general paralysis, and some long-continued attack of syphilis. JELLIFFE.

YOHIMBIN. A NEW APHRODISIAC. L. Löwy. (*Therapeutische Monatschr.*, 14, 1900, p. 597).

The author reports on the alkaloid or mixture of alkaloids ob-

tained from the bark of a member of the Rubiaceae which has a marked effect on the vascular supply of the genital organs. THOMS has given the formula, C_{23}, H_{32}, N_2, O_4 or C_{22}, H_{30}, N_2, O_4 to this body and Oberwarth has determined the lethal dose for guinea-pigs to be 1-6 grain to the kilogram of animal. In cold-blooded animals when given in increasing doses there is a gradual weakening of the function of the spinal cord the heart's action is slowed and depressed and respiration is also depressed. Death is due, in frogs, to paralysis of the heart's action. Blood pressure is diminished. In man, according to Löwy's researches, it has a distinct action in the genital sphere. Doses of the hydrochloride of yohimbin of from 1-10 to 1-6 of a grain, in water 1-500, produce a marked congestion of the ovaries and testicles, with swelling and increase of sexual desire. In a series of cases of Mendel's the impotence of locomotor ataxia was not affected, but the loss of power of prostatic disease and sexual neurasthenia was favorably influenced.

ZUR BEHANDLUNG DER EPILEPSIE MIT BROMIPIN (Treatment of Epilepsy with Bromipin, Bromin 10% in Solution of oil Sessamun). Lorenz. (Wien. Klin. Wochen., Nov. 1, 1900.)

This author gives in detail the histories of eighteen male and sixteen female epileptics when under the bromipin treatment. In not a single one of these cases did there occur any unpleasant collateral action of the drug; and especially no gastro-intestinal disturbance or anorexia. During the monthly weighing of the patients a gain was the rule; five of the thirty-four lost weight; seven held their own, and all the others gained. Some of the patients took the remedy with pleasure and none with repugnance. As a rule it was given in liquid form, only a few taking it in capsules. Bromipin was well borne as a rule, but in a few patients it produced confusion, excitement, etc., for a short time only. In these cases bromipin was then given secretly, mixed with food. Before the bromipin treatment was actually begun, the patients were given no form of medicine whatever for a period of two weeks in order to obtain a definite idea of the therapeutic power of the remedy. During this period eleven of the patients had their attacks increased in number and severity. The dose of bromipin varied greatly in the individual case. In some patients the attempt was made to determine the minimum sufficient dose. In general, the daily amount varied from 10 to 20 gm., equal to from 1.75 gm. to 3.50 gm. of sodium bromide. The available dose in the author's experience varies from 20 gm. to 30 gm., 3.5-5.25 gm. bromide sodium. Thirteen patients showed a distinct improvement over previous results during the entire period of treatment. One patient showed an actual increase in the number of his attacks. The other patients showed no improvement over other methods of treatment. In three cases, major attacks remained unchanged, while the attacks of petit mal were increased in number. The improvement in the general condition was on a par with that obtained in the epileptic state. The bromic acne caused by former treatment, disappeared completely under the bromipin in five cases, while in sixteen others a decided improvement was apparent. Having previously made a trial of the Flechsig method, the author is able to state positively that bromipin gives much better results.

CLARK.

THE INSANE JEW. J. Beadles. (*Journal of Mental Science*, Oct. 1900).

Beadles has studied something over 1,000 cases of insanity in the Jewish race, and notes, first of all, the abnormally great predominance of general paralysis among the men, 21 per cent. of all male Jewish admissions being cases of this disease, in contrast to 13 per cent. of the general yearly average. The mental strain resulting from excessive zeal in acquiring riches, with the consequent worry and annoyance, he considers plays no small part in the mental breakdown of these people. It is difficult to determine the exact amount of insanity among the Jews, but apparently it is not very much greater than the average. The average age at which Jews become insane is distinctly earlier than the age of non-Jews. At Colney Hatch the relapsed cases form 14 per cent of the admissions, which is twice the amount formed by the entire admissions to the London County asylums. This high figure is due in part to the greater frequency of relapses and the greater number of Jewish patients discharged as only relieved; the recovery rate appears better than among the non-Jewish patients, and the death rate is lower. This is due mostly to the small number of deaths among women, owing to the large proportion of puerperal insanity, over 15 per cent. of all the Jewish women admitted being puerperal cases. In non-Jewish admissions the percentage of puerperal cases is a trifle over 6. The explanation of this large proportion of puerperal cases he attributes to the neurotic temperament of Jewish women, the early age at which marriage takes place, and impaired nutrition from unhealthy occupations and surroundings. Notwithstanding the seemingly good recovery rate, he does not look upon the prospects of complete mental recovery as particularly hopeful, very many Jewish patients being discharged to their friends when they are only relieved.

STEDMAN.

THE BORDERLAND. G. W. Balfour (*Edinburgh Medical Journal* 1901, ix, 1, p. 1 and 2 p. 109).

In his Morrison lectures Balfour, while disclaiming to pose as an expert, gives an interesting account of a number of curious cases of persons who would hardly in strictness be classed as insane, but whom he describes as living in what may be called the "Borderland" between sanity and insanity. Some of his examples he has met with in his wide experience as a practitioner, others he draws from history. Analyzing the characters and actions of a number of famous personages, he declares that if the accounts which we have of them are correct, if not insane, they must have at least been living in the borderland. Among these he speaks of Socrates, Mahomet, Joan of Arc, Von Helmont, the celebrated physician, the poet Cowper and others. He shows that when certain manifestations in all probability of an insane nature, have happened to coincide, with the spirit of the age, the persons from whom they emanated have not been recognized as insane, but on the contrary have often been regarded as heroes, and have been the ones to set in action some of the great popular movements of history. Many of these movements when studied at this distance, seem to present all the characteristics of an epidemic or pandemic insanity. As examples of such manifestations, he mentions the Crusaders, the curious dancing mania breaking out in different countries of Europe during two hundred years following the end of the fourteenth century, the more recent "table turning," spiritualism, etc. (Perhaps if he had been living among us he might have added "Christian Science" to his list.) Although hardly presenting anything new, these lectures are written in a scholarly and altogether charming manner, and well repay perusal.

ALLEN.

News and Notes

THE PLANS for the addition to the Government Hospital for the Insane at Washington, D. C., authorized by Congress to be constructed at a cost of \$1,000,000, have received the final approval of Secretary Hitchcock, of the Department of the Interior, and Dr. A. B. Richardson, Superintendent of the institution.

DR. WILLIAM L. CARLYLE, of Hebron, Nebraska, has been appointed assistant physician of the Hospital for the Chronic Insane at Hastings, Nebraska, vice Dr. Woodward, resigned; and Dr. Alma J. Chapman, of Hastings, succeeds Dr. Ewing, resigned.

IN THE case of Herbert C. Wadman, a patient, who died at Manhattan State Hospital, the coroner's jury rendered a verdict that Wadman came to his death from chronic nephritis and acute mania, aggravated and hastened by broken ribs and injuries to the chest and head. The jury censured the management of the Manhattan State Hospital, exonerating the Bellevue Hospital authorities, and found that the injuries were inflicted by Attendant John Foley, and that keeper Michael Carroll was an accessory. Both have been held for the grand jury.

REV. WILLIAM A. PASSAVANT, JR., of Pittsburg, Pa., died July 1. Mr. Passavant established, at Rochester, Pa., the excellent home for the care and treatment of epileptics which was named in honor of his father.

A PORTRAIT BUST of Theodor Meynert was unveiled at the Vienna University, May 19, nine years after his death. The memorial was erected by the government in honor of Meynert's discoveries and achievements in psychiatry.

THE REPORT of the Committee of Inquiry of the National Hospital for the Paralyzed and Epileptic of London, England, has been presented to the Board of Governors. The witnesses heard comprised experts in hospital management, Lord Lister, Sir Wm. Broadbent, Sir Sidney Waterlow and Mr. C. S. Loch; members of the Board of Management; medical officers of the hospital; present and past house physicians; present and past matrons and nurses; the Secretary-Director and other officials. Of the allegations made by the medical staff, the committee find that some of the most important are true: some have foundation in fact, but were exaggerated, and that others are not supported by sufficient evidence. With regard to the question of diet they find that at the beginning of last year the supplies to particular wards fell short more often than ought to have occurred. The quality of the meat, fish, eggs and vegetables was often far from good. In a few cases the personal cleanliness of the patients did not receive sufficient care. In some wards the supply of linen was deficient. The supply of draw-sheets, which from the character of the diseases treated in the hospital are required in large quantity, was very deficient. The method of communication between the medical staff and the Board—through the Secretary-Di-

rector—has not worked well, and the committee are of the opinion that the direct representation of the staff on the Board would be of great and permanent benefit to the hospital and would have prevented the present schism. The allegations of the Board that such representation would tend to destroy the religious and philanthropic character of the hospital is dismissed as unfounded. The committee therefore recommend that the Board be increased by two members chosen by the medical committee from the medical staff. This change would tend to bring the hospital into line with similar institutions. The committee disapprove of the investiture of the Secretary-Director with so much power, and find that he has not used it with tact and judgment, but has exceeded his functions. They recommend the abolition of this office and the appointment of a secretary entrusted with ordinary powers who should be the chief and executive officer of the Board of Management, but be restrained from interfering with the lady superintendent or the medical staff, or that a secretary and medical superintendent should be appointed as a permanent officer, who should not only discharge the duties of secretary and house physician, but should be the responsible and resident head of the whole institution under the Board of Management. So far the prolonged and stubborn contest, which threatened to wreck one of the most useful charities in England, and one of the most famous hospitals in the world, has ended in the complete victory and vindication of the medical staff. The Secretary-Director, an able and energetic official, who has served the hospital more than thirty years, had gradually been allowed to take almost all the powers of the governing body into his own hands.

THE CRAIG COLONY FOR EPILEPTICS which now has 620 patients, will be able to accommodate 120 more when the four buildings, now being built, are completed.

A CONFERENCE has been held for the purpose of adding a new annex to the Allegheny City Home for the Insane at Claremont, Pa. The new annex will cost about \$120,000.

THE LATE DR. LANDON CARTER GRAY.

By the death of Dr. Landon Carter Gray the American Neurological Association has lost a member who, not only during his term of office as President, but also during his many years of membership in the Association, had been untiring in his efforts to promote the welfare of the Association and to extend its influence upon the medical profession of this country. As a teacher and writer upon neurological subjects Dr. Gray did much to further the advance of neurology in America, and his contributions have enriched the transactions of the Association during all the years of his membership. The Association feels even more deeply the loss of the charming personality and the unfailing kindness of his presence at its meetings. In expressing the loss of a distinguished teacher and a genial friend, the Association would tender its deepest sympathy to his widow.

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TABLE OF CONTENTS ON PAGE ii and iv

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Original Articles.

A TUMOR (NEUROGLIOMA) OF THE SUPERIOR WORM
OF THE CEREBELLUM ASSOCIATED WITH COR-
PORA QUADRIGEMINAL SYMPTOMS.*

BY HERMON C. GORDINIER, M.D., OF TROY, N. Y.

Tumors involving by direct pressure or actual ingrowth, or taking their origin in the corpora quadrigeminal bodies, are neither so rare as to be unique or so frequent as to make a report of a case lacking in interest. It is only by constant study and analysis of the results of such lesions that we are able in any degree to appreciate the functions and connections of these bodies, as well as the focal symptoms incident to their disease. The following case occurred in my service at the Samaritan Hospital:

Mr. B. W., by occupation a wagon-maker; age 21; a native of the United States; born and reared in our vicinity, presented himself at the hospital January 24, 1899, complaining of very severe headache, difficulty in walking and partial loss of vision. His family history was entirely negative. Patient had suffered from the usual diseases of infancy and childhood, since which time has been perfectly well and strong. Denied absolutely any venereal infection. He had been injured in

*Read before the American Neurological Association, June, 1901.

the scrotum some years before, which injury resulted in a hydrocele. Was moderate in the use of alcohol and tobacco. Could elicit no history of head injury.

Present trouble began in April, 1898, with severe pains in the head, situated principally in the frontal region. This headache continued more or less constant, and two months later it was followed by a gradual failure of sight in both eyes, for which he consulted Dr. Smith, of Troy, who made an examination and discovered a beginning optic neuritis, involving about equally both eyes, vision being 20-30 in each eye. Pupils were mid-wide and reacted to light and accommodation. The visual fields were normal; there was no nystagmus or paralysis of the ocular muscles. From that time the headaches increased in severity and have at times been accompanied by projectile vomiting. Eyesight has been gradually failing, and his friends have noticed that in walking he swayed to and fro like a drunken man, and, unless supported, that he would almost invariably fall to the left side. Later on he developed dizzy attacks with a feeling of pressure in the head together with intense occipital headache. After entering the hospital he complained of headache on both sides, but principally on the right side. Has irregular choreiform twitchings or contractions of the muscles of both upper and lower extremities. No focal or general convulsions have ever occurred; has a staggering gait, the tendency always being to fall toward his left side. There is no difficulty in swallowing; has perfect control over bladder and rectum; for the past two weeks has suffered from great thirst and has voided large quantities of pale and almost colorless urine. Sexual power normal; bowels constipated; appetite poor; cerebration is decidedly slower than normal, and his memory is gradually failing both for past and recent events. There is no evidence of aphasia.

Status præsens. Patient well-built, five feet seven inches in height, weighs 180 pounds. Examination of lungs and heart disclosed nothing abnormal. Specific gravity of urine 1.010, otherwise normal; face symmetrical, equal palpebral fissures, angles of mouth normal; pupils dilated, left slightly more than right, both react sluggishly to accommodation and doubtfully to light; slight convergence of eyeballs. Slight lateral nystagmus; no hemianopsia; movements of eyeballs normal, save upward and downward, both of which motions were practically abolished; slight double ptosis, the lids falling to the level of the pupils on each side. Patient is able to distinguish and name objects accurately, recognizes colors,

but is unable to read moderately-coarse print; evidence of double optic neuritis, passing on to atrophy, exists. The movements of the facial muscles, as well as those of mastication, are normal. Tongue is protruded straight; all of its movements normal, and no tremor or wasting of that member exists. The uvula is in the median line and moves normally. Soft palate and pillars of fauces normal; no anesthesia of mucous surfaces; smell and taste normal. Heard ordinary conversation very distinctly, and watch 3 feet away from each ear; no dysphagia; no stiffness of muscles of neck. Percussion of scalp elicited no tenderness. All movements of arms and hands performed in a normal manner. Dynamometer "outer scale," right hand 200, left hand 225. No stiffness or wasting of muscles of upper extremities; hands very cyanotic; when patient attempts to contract muscles of forearms or hands, the last two phalanges become chalk-like in color; no incoördination or ataxia of upper limbs. Patient recognized immediately the various objects placed in his hands. On voluntary motion of both upper extremities there was created a coarse, jerky tremor, resembling quite closely that of multiple sclerosis. The patient's gait is of a cerebellar character. He walks with his feet wide apart, does not lift them high, and sways from side to side like a drunken man, and has a marked tendency to fall to the left. Rhomberg's symptom is present in a most characteristic manner. He cannot walk backward without falling. When recumbent it is impossible for him to place the left heel on right knee by movement in a straight line, but the leg sways this way and that, as if uncertain of the exact direction of the knee. Movements of the right leg showed no ataxia. Legs and feet like the arms and hands, very cyanotic.

Reflexes: Patellar tendon reflexes were found absent after the most careful reinforcement. No triceps reflexes. Plantar reflexes possibly a little exaggerated; no Babinski phenomenon; gluteal, cremasteric, umbilical and epigastric reflexes normal. A very careful examination of the entire body failed to disclose the slightest sensory disturbance.

Here then we have a case which presented the following general and local symptoms: double optic neuritis passing on to atrophy, intense and continuous headache, vomiting, dizziness, slow cerebration and gradual loss of memory. The focal symptoms being an ophthalmoplegia interna, with a dou-

ble incomplete external ophthalmoplegia, a marked cerebellar gait, a coarse tremor of the hands and ataxia in the left leg. To these might well be added the choreiform movements, clearly the presence of intracranial pressure, the result doubtless of a growth the primary location of which was thought to be, from the few focal symptoms present, in the region of the corpora quadrigemina; these symptoms corresponding accurately to the requirements mentioned in the dictum of Nothnagel which appeared in the July number of *Brain*, 1889.¹ Nothnagel, after reviewing the literature and introducing a new case, formulated the following diagnostic indications, which may be relied upon in localizing tumors in the region of the corpora quadrigemina, (1) an uncertain, unsteady gait like that of a drunken man, especially if the gait is the first symptom; (2) in addition to the above, a double ophthalmoplegia, not being entirely symmetrical and not involving all the muscles to an equal degree, with an especial predilection for the superior and inferior recti muscles; (3) all other symptoms are subsidiary and of minor importance. In my case it was impossible to determine which of the two prominent symptoms appeared first, the incomplete ophthalmoplegia or the cerebellar gait, as both symptoms were present when the patient entered the hospital, and I could elicit nothing positive from him, his physician or friends in regard to it. But relying on the above dictum of Nothnagel, a diagnosis of a tumor in the region of the corpora quadrigemina was made. The absence of involvement of any of the cranial nerves, other than the optic and motor oculi, and the presence of the coarse intention tremor in the hands seemed to exclude the possibility of the growth being located primarily in the cerebellum and involving secondarily the region of the corpora quadrigemina.

It may not be amiss to state that in considering the question of diagnosis an aberrant form of multiple sclerosis was thought of. The only symptoms, however, indicative of such a condition, were nystagmus and the coarse intention tremor

¹Nothnagel. "On the Diagnosis of Diseases of the Corpora Quadrigemina." *Brain*, July 1889, p. 22.

in the hands. The presence of severe headache, the optic neuritis, the ophthalmoplegia and the cerebellar gait, together with the absence of scanning speech, epileptiform attacks, and evidence of motor tract involvement, seemed to negative such a diagnosis.

He remained in the hospital a week and then returned home, dying February 20, 1899.

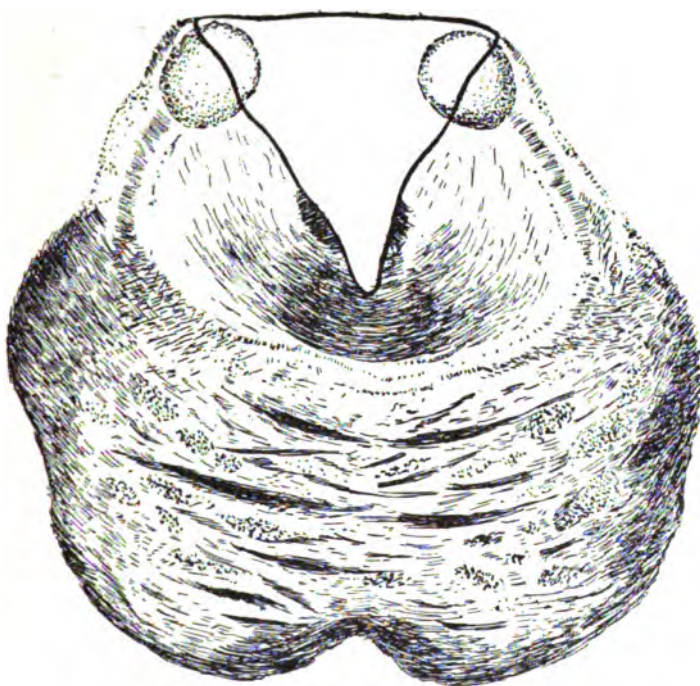


Fig. I. Section through posterior quadrigeminal bodies showing position of tumor, purely diagrammatic.

Autopsy 24 hours after death. Permission to examine only the brain was given. Skull-cap apparently not thickened and dura non-adherent to it. The superior longitudinal sinus contained a soft recent coagulum. The Pacchionian bodies were not specially prominent. Vessels of pia injected. Pia was non-adherent and easily removed, and not at all cloudy. The convolutions and fissures were well developed

and appeared normal. The cranial nerves were all free, not distorted or apparently atrophied. The blood vessels of base and convexity of brain normal. On removing the tentorium a growth was observed projecting from the superior worm of the cerebellum; it was irregularly quadrilateral in shape. The tumor evidently took its origin from the most ventral part of the monticulus, and in its growth forward had completely destroyed the culmen, central lobe and lingula of the superior worm, together with the superior vermiform process. The tumor measured $4 \times 3 \times 2$ 1-2 cm., and on section consisted of a soft homogeneous grayish mass resembling

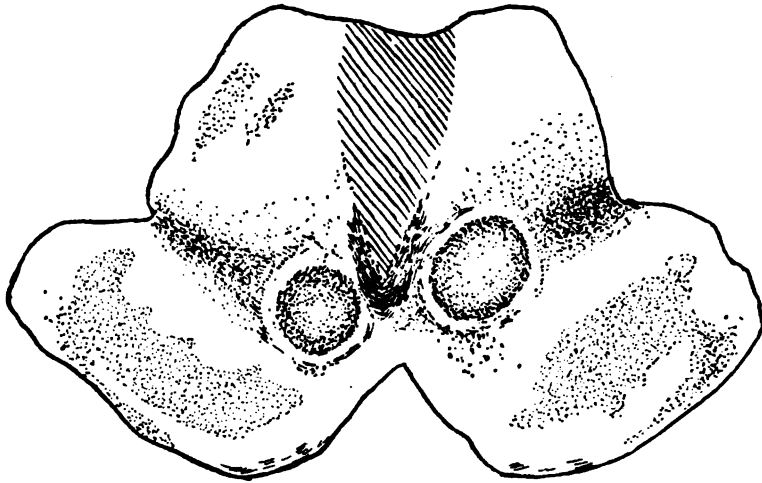


Fig. II. Section through midbrain showing position of tumor together with ventral displacement and atrophy of right red nucleus.

brain tissue, apparently not very vascular. In its forward extension the tumor had involved by actual ingrowth the posterior corpus quadrigeminum of each side, the ingrowth being apparently symmetrical and destroying almost completely the interior of the right posterior corpus quadrigeminum, leaving but a superficial shell of cortex remaining, the left corpus being similarly although much less involved. The anterior corpora quadrigemina or optic thalami did not appear to be affected. The superior cerebellar peduncles could not have escaped involvement either by pressure, or actual destruction, owing to their proximity to the growth. The region of the aqueduct of Sylvius, together with adjoining teg-

mentum, was involved. The hemispheres of the cerebellum were not affected by ingrowth, although the right hemisphere may have been by actual pressure, as a part of the tumor rested on the right cerebellar hemisphere. Sections through the cerebral and cerebellar hemispheres and basal ganglia revealed nothing abnormal. The crura cerebri, together with the parts of the interpeduncular space, presented no macroscopic changes. The ventricles were slightly distended with fluid, and the aqueduct of Sylvius was distinctly narrowed or occluded. The choroid plexus and velum interpositum contained no cysts and were not specially adherent. Small cubes from various parts of the tumor were removed and hardened in alcohols of increasing strength. The cubes

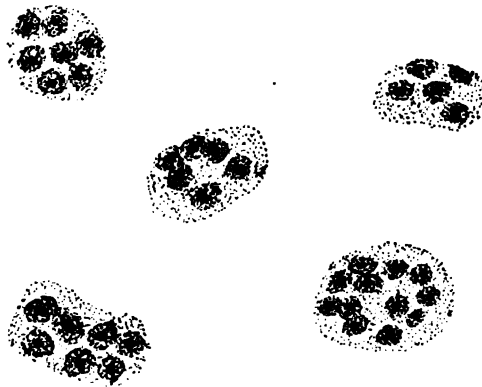


Fig. III. A group of multi-nucleated spheric-shaped cells.

were imbedded in celloidin and the sections stained in hematoxylin and eosin, Weigert's, carmine, nigrosin, Van Geison's stain, and Mallory's phosphotungstic acid hematoxylin.

The histological study of the growth shows it to belong to the type of the neuro-gliomata.² On section it consists of a homogenous dull grayish mass with but slight vascularity. With a low-power Zeiss ocular 2, objective 1-5, it consisted of a great variety of cells which were resolvable into four chief forms. First, large irregularly angular or spherical-shaped multi-nucleated cells variable as to size and containing from three to a dozen nuclei. The nuclear envelopes of the

²H. M. Thomas and Alice Hamilton. "A Case of Neuro-glioma of the Brain." *Journal of Experimental Medicine*, Vol. II, No. 6, 1897.

cells stain deeply, and most of the nuclei are filled with threads and granules of chromatin. The nuclei of many of these giant cells tend to an arrangement in a row along the periphery of the cell. These cells are devoid of processes, as the most careful search after selective staining failed to disclose their presence. The second variety of cells are polygonal or spindle in shape. They exist in large numbers and usually contain a single nucleus, although cells of this type containing two or three nuclei were not rare. With the ordinary nuclear stains, these cells appeared devoid of processes, but with selective neuroglia stains delicate processes could be seen extending from one or both ends of the cell body, which processes were one or more times in length the diameter of the

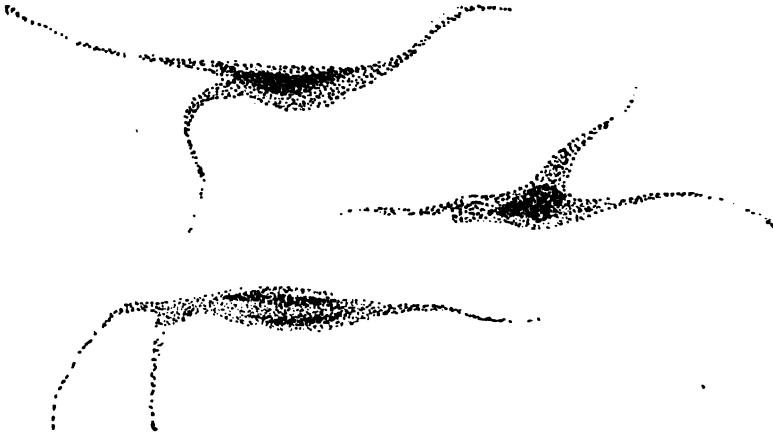


Fig. IV. Polygonal or spindle-shaped neuroglia cells.

cell. Sometimes, though rarely, these processes branched. A few terminated in brushes of fine fibrils, most of the processes, however, terminated in a single free extremity. Many of the nuclei of these cells stained deeply. Some contained vacuoles and stained very poorly. The third variety of cells were more or less spherical, contained a single nucleus and were devoid of processes. They were about the size of polynuclear leucocytes and resembled adult neuroglia cells without processes; they were abundantly distributed throughout, and often found in large numbers about the blood vessels; they may have been differentiated neuroglia cells. The fourth form of cells were normal neuroglia cells of the em-

bryonic type with a single long, undifferentiated process springing from each pole and terminating free or in a brush of fibers. Cells of the type of Deiters with processes radiating from all parts of the cell body were not found. All the above-mentioned forms of cells were separated by a very delicate reticulum of fine fibers, which fibers were not nearly as abundant as in most gliomata. Both the cells and fibers were best studied toward the periphery of the growth where the cells were not crowded so closely together. In a few situations the fibers were crowded into dense reticulum having in their meshes numerous small spherical cells. These fibers were only well seen after sections were stained with special neuroglia stains. The blood vessels were not very abundant



Fig. V. Neuroglia cells of embryonic type.

and, apart from a few of them presenting slight thickening of their walls, the result of proliferation of their spindle cells, were normal.

Although no typical nerve cells could be discovered, there existed a few large oval or flask-shaped cells resembling rather closely those of Purkinje. These cells contained single large centrally-placed nuclei, and distinct nucleoli, and possessed an apical process of some length, which did not appear to fork. No axones were found springing from these cells. With the Nissl or thionin stain, no characteristic arrangement of the chromophilic particles was observed. With Weigert's myeline stain, a few medullated nerve fibers were found

in sections of the growth connected with the cerebellar cortex, but in sections more remote none were seen.

The crura cerebri were severed close to their connection with the cerebral hemispheres, and they together with the pons and medulla were hardened in Orth's fluid, imbedded in celloidin, and the sections stained after the method of Weigert and Pal's modification of the same and with nigrosin. Sections through the mid-brain at the level of the anterior quadrigeminal bodies showed the Sylvian aqueduct to be occluded and the central gray matter to be spread out. Both red nuclei appeared smaller in comparison with those seen in normal sections, and

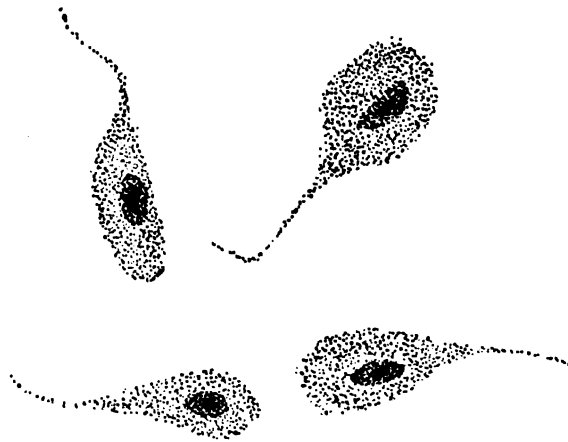


Fig. VI. Transitional cells of type of Purkinje.

the right was distinctly smaller than its fellow, and displaced considerably forward. The anterior quadrigeminal bodies were not involved. Owing to the spreading out of the central gray matter, the third nerve nuclei were distorted, and it was impossible to localize the various cell groups into which these nuclei have been divided. The left nucleus contained a less number of nerve cells than its fellow of the opposite side. The nucleus of each side contained numerous atrophic cells devoid of processes and without nuclei; other cells had lost their processes, their chromophylic particles were degenerated and their nuclei were often eccentrically placed, and the cells were deeply pigmented. This cell degeneration of the oculomotor nuclei was most marked in sections more dorsally placed, and seemed to involve, as well as one could

judge from the peculiar distortion of the parts, the most dorsal or spinal division of each oculomotor nucleus, as well as the small cells between the fibers of the dorsal longitudinal bundles.

Sections through the posterior quadrigeminal bodies showed that the tumor, which on section was irregularly wedge-shaped, had destroyed a part of the interior of each of these bodies, the right being most involved. The aqueduct of Sylvius was obliterated, and the central gray matter almost entirely replaced by the growth. It displaced laterally the dorsal longitudinal bundles and destroyed the most ventral part of each posterior division of the oculomotor nucleus and the nuclei of the fourth nerves, as there remained only a few scattered atrophic nerve cells to indicate their position. Extending ventrally, the tumor grew into the tegmental region and occupied a position dorsal to the red nuclei, thus destroying the fibers of the superior cerebellar peduncles at their point of decussation. It is interesting to note that in examining a large number of transverse sections of the pons and medulla nothing abnormal was found, save a few degenerated fibers scattered irregularly through each superior cerebellar peduncle. The lateral and mesial fillet of each side were perfectly normal and contained no degenerated fibers. The cells of the ventral auditory nuclei appeared normal, as did these of the superior olivary bodies. The facial and abducens nuclei contained no degenerated nerve cells. The descending trigeminal root fibers of each side were intact. The fibers of the motor tracts were not degenerated.

To summarize the post-mortem findings: We have in this case a tumor, neuroglioma, taking its origin in the ventral part of the superior worm, which in its growth forward into the mid-brain region destroys the superior medullary velum, the interior of the posterior quadrigeminal bodies, more especially the right, the central gray matter surrounding the aqueduct of Sylvius, the dorsal part of each oculomotor nucleus as well as the nuclei for the trochlear nerves, the tegmentum in the region of the red nuclei, and the superior cerebellar peduncles at their point of decussation; involving most, the fibers of the peduncles coming from the left side.

In the light of these findings the salient symptoms of this case may be explained as follows: First, the cerebellar gait which was so prominent a symptom may be explained by de-

struction either of the superior worm of the cerebellum or the superior cerebellar peduncles; probably both causes were in operation in this case. The tendency to fall to the left was possibly due to the involvement of the fibers of the left superior cerebellar peduncle after their decussation, in the right tegmental region. As Curshman³ found after section of either peduncle, the animal would invariably fall toward the side of the lesion.

The ocular symptoms consisting of paralysis of accommodation and of light reflex, with inability to move the eyeballs upward and downward and double ptosis may be explained by the position of the lesion. Although much disagreement of opinion exists among anatomists and clinicians in regard to the exact location of the various centers of movement for the internal and external ocular muscles, it is the accepted opinion of most observers that the centers for the sphincter pupilli and accommodation are well forward, while those for the external ocular muscles are more dorsally placed. Koelliker⁴ does not believe that separate centers exist in the human oculomotor nuclei for the individual external ocular muscles, and his view is supported by the recent exhaustive experiments of Bach.⁵ Professor Starr,⁶ however, proves, by a review of the clinical cases, that the centers for the superior and inferior recti muscles, as well as for the inferior oblique, are grouped closely together, while the centers for the internal recti and levator muscles are more forward, the latter being placed by him first.

The paralysis of the internal ocular muscles in this case was probably a pressure symptom, as the growth did not extend forward enough to actually destroy these centers.

The paralysis of the upward and downward movement of the eyes, due to inaction of the superior and inferior recti muscles together with the superior and inferior oblique, was

³Curshman. *Arch. für klin. Med.* Bd. X, p. 250.

⁴Koelliker *Gewebelehre*. 6, Auflage, p. 294.

⁵A. Bach. *Archiv. für Ophthalmolog.* Band XLV, Abt. 2, p. 339.

⁶Starr, M. A. "Ophthalmoplegia externa partialis." *JOURNAL OF NERVOUS AND MENTAL DISEASE*, 1888, p. 301.

due to the involvement of the cells of the posterior portion of the oculomotor nuclei and of the fourth nerve nuclei.

According to Wernicke, a separate center exists in the posterior corpora quadrigemina for the upward and downward movements of the eyes, similar in character although not in action to the abducens centers in the pons for the associated lateral movements of the eyes. That such a center exists seems doubtful and is not supported by clinical facts.

Although there is still some doubt as to the exact position of the center of movement for the levator muscles of the eyes, one author, Knies, placing it between the center of the sphincter pupilli and that for accommodation, while another, Siemerling,⁷ locates it in a small group of cells between the lower end of the third nerve nucleus and the fourth or trochlear. These cells being destroyed in a case examined by him of congenital ptosis. The weight of evidence, however, places this center with those of the other external muscles, save the superior oblique in the mid-region of the chief nucleus, which in my case was involved.

The slight convergence observed was probably due to spasm of the internal recti muscles, the result of irritation of their cell groups, or their root fibers, in the tegmentum; although it may have been the result of paresis of the external recti muscles from indirect pressure on the abducens nerves. These, however, showed no macroscopic changes and their nuclei were normal. The impaired vision I believe can be ascribed to the intense optic neuritis and not to impairment of function of the anterior corpora quadrigeminal bodies, as these latter bodies were normal, and Nothnagel, Henschen and others have proven are not directly concerned with the function of vision.

The general choreiform-like movements and the intention tremor of the hands observed in my case were probably due to implication of the superior cerebellar peduncles. In proof of this causation of the tremor and choreiform movements may be cited the well-known experiments of Ferrier and Turner, who have described similar tremors resulting from sec-

⁷Allbutt's System of Medicine, Vol VI, p. 767.

tion of the superior cerebellar peduncles in monkeys. They found that if a peduncle was divided between the cerebellum and its decussation in the tegmentum, the tremor was confined to the side of the lesion, and suggest that in clinical cases, one might explain the crossed tremor in unilateral lesions, by affection of the cerebellar peduncle above its decussation. In this connection will be briefly mentioned the very interesting cases of Bonhoffer and Sander.⁸ A merchant, aet. 55, had vertigo, headache and pain in arms, shoulders and legs, with marked choreiform movements in right arm and involuntary movements in the legs, especially the right. Movements of the same character were observed in the face and tongue. Ataxia existed in both legs, most marked in the right, also in right arm. Slight lateral nystagmus was present. Autopsy showed a carcinoma of the distal end of the posterior quadrigeminal bodies, involving the decussation of the superior cerebellar peduncles. The fillet, and oculomotor nucleus of each side were normal. Sander⁹ describes the following case: Postal clerk, aet. 72, had for four years after an apoplectiform attack, left side hemiparesis with disturbances of speech. Lively choreiform movements of the arms and legs of the right side existed. Right patellar reflex absent. Right-sided abducens paralysis. Double optic neuritis was present. Autopsy showed a gliosarcoma, rather larger than a walnut, which completely destroyed the right corpus dentatum. In the adjacent white matter external to this tumor existed another small growth.

In five of the eleven cases in literature, namely, those of Bruns, Weinland,¹⁰ Eisenlohr,¹¹ Ilberg¹² and Bonhoffer, in

⁸Bonhoffer. "Ein Beitrag zur Lokalisation der choreatischen Bewegungen." *Monatsschr. für Psychiatrie u. Neurologie*, B. I, p. 6.

⁹Sander. "Ein pathologischer Beitrag zur Function des Kleinhirns." *D. Zeitschr. f. Nervenheilk.*, B. X. 366.

¹⁰Weinland. "Ueber einem tumor der Vierhügelgegend und über die Beziehungen der hinteren Vierhügel zu Gehörsstörungen." *Archiv für Psychiatrie und Nervenkrankheiten*, C. XXVI, p. 363.

¹¹Eisenlohr. "Zur Diagnose der Vierhügel-Erkrankung." *Neurologisches Centralblatt*, B. IX, p. 1,747.

¹²Ilberg. "Ein Gumma der Vierhügelgegend." *Archiv. für Psychiatrie und Nervenkrankheiten*. B. XXVI, p. 325.

which lesions of the corpora quadrigeminal region were accompanied by tremor or choreiform movements, the superior cerebellar peduncles were involved. Both Bruns and Weinland believe that the tremor is due to irritation of the motor fibers of the pyramidal tracts, although in the cases they report the autopsies showed the motor tracts to be normal, while the superior cerebellar peduncles were diseased.

Owing to the connection of the inferior quadrigeminal bodies with the central auditory tracts, it is interesting that in the case herein reported hearing was normal; the patient hearing ordinary conversation very distinctly and the watch three feet away from each ear. This is entirely explicable by the absence of implication of the lateral fillet of either side, or of the nuclei about which their fibers terminate.

Weinland found loss of hearing in nine out of nineteen cases of tumor of these bodies, collected from literature. In five of this number, the loss was bilateral, while in four cases it was unilateral in character, involving the ear of the side opposite to the lesion.

In conclusion, it may be stated that the case here reported presented the typical symptom-complex outlined by Nothnagel as being diagnostic of tumors having their primary seat in the corpora quadrigeminal region. The autopsy showed, however, the growth to be located primarily in the cerebellum and to have involved secondarily these bodies together with the adjoining tegmental region.

In a somewhat similar case reported by Thomas, the diagnosis of tumor of the corpora quadrigemina was based upon the combination of double nerve deafness, cerebellar ataxia and weakness of the eye muscles. At the autopsy, however, the tumor was found to have its primary seat in the median side of the left cerebellar hemisphere and to have affected by pressure only, the corpora quadrigemina, particularly of the left side. The seventh and eighth nerves of the same side were flattened, while the same-named nerves of the opposite side were small and atrophied.

To these cases may be added the well-known case of Bruns, which presented in a most characteristic manner the

Nothnagel symptom-complex, but in which Bruns made a diagnosis of a primary cerebellar tumor with secondary involvement of the corpora quadrigemina. He based his diagnosis on the early appearance of cerebellar ataxia with slight paresis of the left abducens and the right facial nerves, and the late appearance of asymmetrical external ophthalmoplegia.

I have collected five cases, Ransom,¹³ Sachs,¹⁴ Bruns,¹⁵ Henoch,¹⁶ and Steffen,¹⁷ from literature in all of which ophthalmoplegia appeared first, the cerebellar gait appearing later. In each case the autopsy showed the primary location of the lesion to be in the region of the quadrigeminal bodies.

With the above-mentioned facts in mind, I believe the dictum of Nothnagel needs revision, as his statements are altogether too dogmatic. Bruns¹⁸ is nearer the truth when he states that a distinction between corpora quadrigeminal and cerebellar tumors is at times absolutely impossible. In favor of the tumor being primarily located in the corpora quadrigeminal bodies, is the appearance of an external bilateral asymmetrical ophthalmoplegia, often combined with internal ophthalmoplegia, as the first symptom, the cerebellar ataxia occurring later. Favoring the same situation is the absence of cranial nerve involvement other than the oculomotor or parietic, and the presence of unilateral or bilateral deafness. In favor of the lesion being primarily situated in the cerebellum and involving secondarily the corpora quadrigemina, is the early appearance of a typical cerebellar gait, especially if combined with paralysis of the abducens or facial nerves of one or both sides, and followed by ophthalmoplegia of the above-described type.

¹³Ransom. *Lancet*, 1895, V. I, p. 1,115.

¹⁴B. Sachs. "Disease of the Mid-brain Region." *American Journal of the Medical Sciences*, March, 1891.

¹⁵Bruns. "Zur differentiellen Diagnose zwischen den Tumoren der Vierhügel und der Kleinhirnes." *Archiv. für Psychiatrie und Nervenkrankheiten*. B. XXVI, p. 300.

¹⁶Henoch. *Berliner klinische Wochenschrift*, 1864, No. 13.

¹⁷Steffen. *Berliner klinische Wochenschrift*. 1864, No. 20.

¹⁸Bruns. "Die Geschwülste des Nervensystems." p. 145.

A CASE OF PROGRESSIVE UNILATERAL ASCENDING
PARALYSIS, PROBABLY DUE TO MULTIPLE
SCLEROSIS.¹

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The following case, while showing symptoms leading to the diagnosis of an atypical multiple sclerosis, is reported principally on account of its presenting the symptom-complex of a progressive unilateral ascending paralysis, the rarity of which certainly justifies the report. The history of the patient is as follows:

He is a young man, aged nineteen years, and a cashier by occupation. Both parents are living and well. It is worthy of note that his father contracted syphilis sometime after the patient's birth. He has two sisters both healthy. A parental aunt is idiotic. The patient has had the ordinary diseases of childhood. Five years ago he suffered from what he says was an attack of rheumatism, affecting both legs, and brought on by exposure while camping. He has recently suffered from a similar attack involving the left shoulder. Four years ago after a right lower molar tooth had been extracted, there was suppuration with the formation of a sinus that healed in three months. During his school life, which ceased two years ago, he had a good deal of frontal headache, often caused and always aggravated by excitement. Since leaving school he has not suffered from it. His temperament has always been nervous.

About four years ago he noticed that he dragged his right foot, that there was a tendency for it to cross in front of the left one, and that he wore off the sole of his right shoe at the toe. Two years after diplopia was noticed, which persisted for five months, when it disappeared without treatment and has not been noticed since. About this time it was noticed that the right leg was smaller than the left. It was not until five months ago that weakness of the right arm was noticed. He was unaware of the weakness of the right side of the face. He has never suffered from convulsions, spells of unconsciousness or vertigo. Examination of the patient

¹Presented at a meeting of the Philadelphia Neurological Society.

shows him to be of slight build but well nourished and intelligent. The teeth are regular but show a marked tendency to decay.

When the patient walks the right leg is held rigid and the toe dragged. All movements of this leg can be performed but not with the same strength as those of the left. The right arm is distinctly weaker than the left, the dynamometer registering forty-five upon the right and seventy-five upon the left, but the arm is not spastic. There is atrophy of the muscles of the right leg and arm, and the leg is one-half an inch shorter than the right. For instance, the right arm at six and eight inches below the acromio-clavicular articulation measures $9\frac{1}{4}$ and $9\frac{1}{2}$ inches respectively, while the left arm at the corresponding points measures 10 inches. The forearms differ in about the same ratio. The difference in the legs is more marked, thus the right thigh at 8 and 4 inches above the upper border of the patella measures 17 and $14\frac{1}{4}$ inches respectively, while the left leg at the corresponding points measures $17\frac{1}{2}$ and $15\frac{1}{2}$ inches, while at 7 inches below this point the right leg measures $11\frac{1}{4}$ inches and the left $12\frac{1}{8}$ inches. No changes are noticed in the intrinsic muscles of the hands excepting that the adductor pollicis of the right side is not so large or firm as that of the left. This atrophy seems to be a concentric one, the growth of the abnormal side not keeping pace with the other.

The muscles all respond well to the faradic current. The tendon reflexes of both leg and arm are much increased on the right side, and there is a well-marked Babinski reflex, while on the left side the knee-jerk is active, but not excessive, there is no ankle clonus, and testing for the plantar reflex shows a slight extension of the great toe and flexion of the others.

The right side of the mouth droops a little, and the nasolabial line is not so well marked upon that side. When he smiles the mouth is drawn markedly to the left and he is not able to voluntarily draw the angle of the mouth to the right as well as to the left, but the difference is not so marked as when the muscles are used to express the emotions. The movements of the upper part of the face seem to be equally well performed, but the effort to make these movements causes a marked fibrillary tremor of the corrugator supercilii of the right side. This was also noticed under similar conditions in the muscles about the angle of the right side of the mouth. Tremor of either arms or legs is not present. The tongue is protruded in the median line and is not tremu-

lous. A paresis of the muscles of the right side of the throat is reported by Dr. Grayson, the voice has a distinctly nasal twang, and the patient says it is thicker and more indistinct than it used to be.

Examination of the eyes by Drs. W. F. Norris and Mclor, showed a marked nystagmus, especially when the eyes are turned to the right; paresis of the left inferior rectus, and paleness of the temporal halves of the discs.

Tactile, pain, temperature, muscle and the stereognostic senses are not impaired. There is a slight Romberg symptom, and at times while standing or walking the patient has a tendency to lose his balance. He is able to perform fine movements, such as writing or buttoning his clothes with the right hand. The right hand and foot feel colder to the touch than do the left. Both hands are cyanotic.

The patient is mentally bright, his occupation, that of a cashier, involving mental quickness and capacity.

While neither intention tremor nor mental dulness is present, and the patient has never suffered from either an epileptiform or apoplectiform attack, the diagnosis of multiple sclerosis seems to be justified by the presence of nystagmus, paresis of extra-ocular muscles, paleness of the temporal halves of the optic discs, increased deep reflexes, and some disturbance of speech. A progressive unilateral ascending paralysis seems to be a most rare symptom-complex. The only cases that the writer has been able to find in the literature are those reported by C. K. Mills¹ and W. G. Spiller.² In Mills' case, a man fifty-two years of age, weakness of the arm was noticed eighteen months after weakness was noticed in the leg; in the case just reported the interval is nearly four years, the time of involvement of the face could not be fixed. This patient also had hyperesthesia of the right side, lasting a few weeks, uniform wasting of the right leg, increased tendon jerks on that side, with slight increase of the patellar tendon jerk on the left. While a typical Babinski reflex was not present the reflex is described as "between plantar flexion of the toes and the dorsal flexion of the Babinski reflex," as contrasted with the normal response on the left side. Sen-

¹JOURNAL OF NERVOUS AND MENTAL DISEASE, April, 1900, p. 195.

²Phila. Med. Journal, Feb. 9, 1900, (Vol. vi.), p. 299.

sory disturbances, except as above noted, spasticity and contractures, ocular paralyses and changes in the fundus, were not present. Mills, after a careful consideration of the possibilities, considers this case as probably representing a new form of degenerative disease. An "unusual form of disseminated spinal sclerosis" is excluded. In his paper he quotes a case from Dejerine's clinic reported by Thomas and Long, in which there was a progressive unilateral ascending paralysis, but differing from the cases of Mills, Spiller and the writer, in the presence of diminished sensibility. Multiple sclerosis was found at the autopsy. Spiller's patient was a man forty-one years of age, who noticed weakness of the left arm about one year after the weakness was noticed in the left leg. The left leg was spastic, the deep reflexes were all increased in both leg and arm, and a Babinski reflex was present upon the affected side. Involvement of the face was slight and optic atrophy was present in the left eye. He considers the diagnosis of an atypical form of disseminated sclerosis as hardly probable, because all the usual symptoms of that disease were absent, because the patient was well advanced in years when the symptoms appeared, and because it would be an extraordinary grouping of the sclerotic foci which would leave the right side of the body intact and cause a gradually ascending and spastic paresis of the left side, very pronounced in the lower limb, less so in the upper limb, and still less so in the face. In the case reported by the writer in which there are several of the characteristic symptoms of multiple sclerosis present, this grouping as far as can be judged clinically, seems to have occurred. It is well known also that cases of multiple sclerosis may rarely occur without the characteristic symptoms of that disease being present. Lapinsky³ reports a case in which a man aged forty years first noticed weakness in the lower extremities, later becoming spastic. This was succeeded in several years by weakness of the arms. At this time there was also slight pain and incontinence of urine, both of which soon disappeared. The deep reflexes were increased. The spasticity greatly increased, so

³*Zeitschrift für klin. Med.* 1895, p. 362.

much so that tendon jerks disappeared. Atrophy of the interossei appeared later, a slight tremor (not intention) was present. In 1894 the patient died and multiple sclerosis was found at the autopsy. There were never at any time ocular symptoms, disturbance of speech, intention tremor, impaired sensation, or spells of unconsciousness or vertigo. It will be noticed that in this case there was a progressive bilateral ascending paralysis. It seems possible therefore that the cases reported by Mills and Spiller may be cases of multiple sclerosis.

An interesting feature of the case reported, in which it differs from the two previous ones, is the involvement of the muscles of the right side of the throat. The possible influence of the attacks of rheumatism in the etiology is also of interest.

A CASE OF PROGRESSIVE MUSCULAR ATROPHY AND TABES WITH AUTOPSY.*

By JOSEPH COLLINS, M.D.

ABSTRACT.

A man forty-seven years old, who denied syphilis and intemperance, noticed in 1892 a weakness and feeling of unwieldiness in the left hand. A few months before he had had a fall from a horse, striking the back of the neck, and he had also what seemed to be an infectious sore throat. After the weakness of the left hand he developed a fairly typical progressive muscular atrophy of spinal origin, the atrophy being so pronounced in both upper extremities that he could scarcely hold a pencil. The lower extremities became affected simultaneously, the atrophy there being most pronounced in the hips and in the peroneal muscles. From the beginning there was incompetency of the bladder, bowels and sexual function. Aside from this there were two very distressing symptoms: formication of the legs and thighs, occasionally of other parts of the body, and involuntary drawing up of the legs at night while in bed.

Examination showed, (1) the atrophy already spoken of; (2) pin-point pupils which did not respond to light and shadow; (3) absent knee-jerks and ankle-jerks; (4) slight increase of myotatic irritability to mechanical stimuli in the upper extremities; (5) absence of objective sensory disturbance and of tenderness on deep-seated pressure; (6) diminution of galvanic irritability in the atrophied muscles, but no reaction or degeneration. The course of the disease was steadily progressive; the duration being about eight years. The phenomena immediately preceding death were bulbar.

A summary of the pathological changes is as follows: (1) degeneration of the posterior columns, most pronounced in the columns of Goll and in the ventral field of the column of Burdach, extending from the lumbar cord to the nuclei in the medulla oblongata; an ascending degeneration. (2) Degeneration of the crossed pyramidal tracts, most marked in the lumbar cord, least evident in the dorsal, relatively slight in the cervical, but easily detected in the oblongata. The un-

*Read before the American Neurological Association, June, 1901.

crossed pyramidal tracts were not affected. (3) Comparatively slight changes in the ventral gray matter. The contour is normal. The cells though few in number do not show any inherent alteration of structure, nor is there evident disease of any constituent of the ventral cornua. (4) Relative preservation of the cells of the posterior ganglia. Many of the posterior ganglion root fibers are degenerated. (5) Profound pathological alteration of the voluntary muscles, parenchymatous and interstitial degeneration. (6) Interstitial degeneration of all of the nerves examined, the musculo-spiral, ulnar, popliteal, sciatic, etc. From one-fifth to one-third of all the nerve fibers are in a state of extreme degeneration.

DISCUSSION.

Dr. P. C. Knapp, in the discussion on this paper, presented two cases of muscular atrophy. He said the first patient's face might be familiar to many of the gentlemen present, as the case with his picture, was reported two or three years ago in *Brain*, by Whiting. The patient came to the hospital in 1895 with the first symptoms of his trouble. He was a tailor and at that time he began to have atrophy of the muscle of the thumb and forefinger of the right hand. About the same time he began to have very severe lancinating pains chiefly in the arms. He has continued to have pains of greater or less severity. The pupils are unequal, do not react to light, but do react to accommodation. He has had a small strip of analgesia about the left chest, and in upper part of the shoulder at different times. The atrophy has progressed very steadily. Within the last six months the atrophy has gone down so that the right lower leg is pretty thoroughly wasted. The muscles show the ordinary degenerative reactions, but the condition of the pupils, the typical tabetic cuirass of anesthesia and analgesia, the complete absence of knee-jerk before there was any wasting in the legs, and the very intense lancinating pains show that there is undoubtedly co-existing tabes. The gait was not particularly ataxic.

In connection with these cases Dr. Knapp showed two other patients. They had no relation to the paper under discussion, but he was told that the secretary was to read a paper on muscular dystrophy and so he offered to show them.

The older brother was fourteen. The disease had been manifest some four years with the degree of wasting now present. He could extend the legs a little, but he was wholly unable to stand. The calves were still of fairly good size, but

not very large. The younger brother was a perfectly typical case of pseudo-hypertrophy. The enlargement of his infraspinati, as well as the calves, was very marked.

The younger brother was twelve and has had the disease about a year. The progress had been fairly rapid. Dr. Knapp thought, however, there had been some vague symptoms two or three years. The older boy had a typical myopathic facies, although there was no real paralysis of any of the facial muscles.

Dr. C. K. Mills presented notes of a case, a part of the discussion of Dr. Collins' excellent paper. He said that Dr. Collins' paper was one of the most important contributions to this subject we have ever had. He was especially interested in what he understood to be the relative findings as regards the ventral horns and the peripheral nerves, and it was in connection with this he believed that the presentation of his case would be appropriate. The case he believed to be almost unique. He did not care to enter into any discussion of the subject of pseudo-tabes, reserving what little he had to say about that for his paper, except to say that we recognize the use of this term as having application to a variety of conditions.

The case under consideration was a man about seventy-five years old. Twelve years before his death he first suffered from weakness in one lower extremity and from pain in his back, six years before his death weakness in both lower extremities and more pain, and he also developed a few other sensory symptoms. He began to have at very rare intervals lancinating pains. Then he remained some time in the wards of the Philadelphia Hospital, where he was examined by Dr. Mills and also by one or two of his colleagues, and he had records in the paper of three examinations. These were made two in 1898 and one immediately before the patient's death in 1899. These practically gave the same results with the exception of course that he had prelethal symptoms at the last examination. The symptoms were as follows: the man had marked ataxia both of the lower and of the upper extremities. He had slight spasticity especially at the last examination. He had exaggerated knee-jerks, but no ankle-clonus and no other phenomena of this kind except that he had the jaw-jerk and also the exaggerated biceps-jerk; no loss of temperature sense except that on the dorsal aspects of his feet he usually made mistakes as regards the difference between heat and cold. He had then occasional tabetic pains. The left eye was normal as regards response to light, conver-

gence and accommodation; in the other eye the response was almost entirely lost to light and to accommodation. There was scarcely any atrophy that was noted in the history of the case. These in effect were the important phenomena of the case. A careful post-mortem examination was made. The cord and roots were removed and also specimens from the sciatic and popliteal nerves, and from the terminal branches of the posterior tibial and other nerves, also specimens of muscle. These were submitted to Dr. Spiller for examination and he carefully examined the cord and the nerve roots and the muscle submitted to him. The result in brief was this: There was no lesion of the spinal roots or cord at all except a slight change in the cell-bodies of the ventral horns. The distal portions of the peripheral nerves examined, however, showed marked degeneration, as in Dr. Collins' case. The muscle fibers were also degenerated but not to so marked a degree.

Clinically this case had so much the aspect of a case of combined sclerosis or ataxic paraplegia of a spinal type with the exaggerated knee-jerks and the other points here presented, that Dr. Mills had been inclined to this diagnosis.

With regard to Dr. Collins' paper Dr. Mills said that he had seen at least one case similar in nearly all of its features to his. Such cases are rare, as are also those of the type he himself had recorded.

Dr. G. W. Jacoby said that Dr. Collins was kind enough to call his attention to the fact that he had seen this patient some years ago, and he had looked up his history and found it corresponded in every detail with the history that Dr. Collins had given, except that Dr. Collins' history was very much more complete than his own, his being the result of a single examination. The remarkable thing about the case and the value of it was that the clinical diagnosis was so absolutely at variance with the pathological findings. The clinical diagnosis Dr. Collins made and the clinical diagnosis Dr. Jacoby made was the diagnosis given in the program, "A case of tabes with progressive muscular atrophy." If we leave aside for one moment the question of tabes, of which Dr. Jacoby thought there was very little doubt, we have here the report of a case of multiple neuritis and not of progressive muscular atrophy. How is it that two presumably careful observers should have made a diagnosis here of progressive muscular atrophy when we have pathologically certainly no progressive atrophy, but a multiple neuritis? He did not know. It was certainly a mistake and one which appeared all the more

strange as in Dr. Jacoby's notes the statement was made that there existed "no reaction of degeneration." He did not know the details of his electrical examination at that time, but that was the summary of the result. Is our reaction of degeneration as such of no diagnostic value in the recognition of multiple neuritis? We certainly believe it is, and yet Dr. Jacoby thought the time may have come when we must make a difference between degenerative processes, chronic degenerative progressive neuritis and acute neuritis so far as the influence of this process upon any reaction of degeneration, that is to say, that we may get different results in these different conditions.

The case was unusually instructive to Dr. Jacoby, and this marked discrepancy between the clinical and the pathological diagnosis is one which he did not understand.

Dr. Dana said that in listening to the history of Dr. Collins' case he was struck, as he thought all had been, with the fact that it was an almost classical picture of the history of a case of progressive muscular atrophy, but superimposed upon this were few symptoms of locomotor ataxia. He would, therefore, from the clinical point of view, put this patient down as a case of progressive muscular atrophy associated with tabes. In his experience he had not met with locomotor ataxia plus progressive muscular atrophy, but progressive muscular atrophy on which apparently a tabes has been superimposed does occur. It seemed to him that the explanation was that persons with progressive muscular atrophy sometimes acquire syphilis, and as a result of this accident tabes develops; and he did not believe that there is any real kinship between the diseases. Now, when Dr. Collins came with his pathological report, of course he upset the whole scheme, and we have to take two choices: either he has found a form of progressive muscular atrophy due to a neuritis, or we must explain this as being some aberrant form of the ordinary type. Dr. Dana was very much indisposed to admit that there are freaks in pathology. He thought if the dates were carefully sifted we generally find that apparently curious disorders really belong to familiar types. It is a question in a case in which the progressive atrophy had lasted so long, been so extreme, and where the muscles had undergone complete degeneration, whether the degeneration of the nerves was not simply secondary and natural to this excessive loss of muscular tissue. We know that when there is extreme atrophy of muscles of long standing, the nerves associated with them die, and there is a condition like degener-

ative neuritis. If Dr. Collins could prove his contention Dr. Dana thought it was a case of extreme importance because it established a type of progressive muscular atrophy which is almost a new one.

Dr. T. Diller said that in regard to the two boys Dr. Knapp showed, he was very much struck with the force of the grasp of both of them; and this called to his mind a patient suffering from progressive muscular dystrophy whom he had under observation for a number of years. Only a short time ago he went to see him again and found him in an extreme condition of helplessness; but upon testing the grasp of both of his hands he was not a little surprised to find it was almost as much as we would have expected in a normal boy of his age—seventeen or eighteen. It seemed to Dr. Diller a very striking thing how this selection of the atrophy will persist almost to the very end.

Dr. H. M. Thomas referred briefly to a case under observation, a case that recalled to his mind the criticism Dr. Spiller made of the two cases of congenital bilateral facial paralysis Dr. Thomas had reported to the society. This case is a young woman twenty-two years old, who, as far as he knew, had a perfectly normal family and personal history up to two years ago, when she noticed slight difficulty in speaking and difficulty in whistling. These symptoms progressed very gradually. He examined her in February of this year. She then showed the picture of a normal girl except that upon examination while she was able to raise and contract the eyebrows, could elevate the upper lip, could retract the corners of the mouth to some extent, she was unable to close the eyes or pucker the lips; she could not whistle or do any movements requiring the action of the orbicularis oris. Her speech was slightly nasal, the pharyngeal muscles being somewhat weak. The only other muscular weakness was in those muscles which hold the head forward. The symptoms were perfectly constant; there was no marked variation from day to day. There was decreased electrical excitability in these muscles; there was no sensory disturbance. The case had interested Dr. Thomas very much. He believed it to be one of progressive muscular dystrophy of the infantile type beginning late in life.

Dr. P. C. Knapp said that Dr. Thomas had referred to a case of congenital facial paralysis which Dr. Knapp had hoped to show. If he might put the case on record it was a young woman, twenty-nine, who came to the hospital, a native of Cape Breton, uneducated, unable to tell very

much of her early history. The story was that when her mother was confined she was unattended, and the child fell upon the floor and was found lying face down. The child is reported never to have closed her eyes or her mouth. She came to the hospital with a paralysis of all the muscles upon both sides supplied by the facial nerve, total and complete. She could cover the cornea by raising her eyes, the palpebral fissure was three-eighths to one-half inch in width, there was surprisingly little conjunctivitis; there was a little movement of the muscle which drew the corner of the mouth outwards and downwards on the right, and a quiver of those muscles on the left. No reaction was obtained to either current with fairly strong current. A very marked wasting of all the facial muscles existed, so that all the outlines of the face were like those of a person in the last stages of emaciation. The ocular muscles and muscles of mastication were perfectly normal. Speech was defective from the failure to pronounce the labials. No disturbances of taste were discoverable. There were ordinary disturbances of hearing, air conduction being better than bone, although the scale of hearing was not at the time tested. The paralysis had existed ever since she could remember. She was twenty-nine, an ignorant domestic. Dr. Knapp had hoped to get her here today to show her.

Dr. Dercum had suggested that the patient Dr. Knapp showed with the very marked muscular atrophy might possibly have been a case of neuro-tabes. In a paper read before this society two or three years ago Dr. Knapp depicted his sensory disturbances. There was a sensory disturbance of pain and tactile sensibility such as he had drawn—a typical tabetic disturbance upon the chest. In addition to that the unequal pupils and Argyll-Robertson pupils were much more suggestive of true tabes than of neuro-tabes.

Dr. J. Collins said he was very loath to maintain that the progressive muscular atrophy in this case was dependent upon the lesions so far found in the nerves and in the muscles. Of course he made the diagnosis of progressive muscular atrophy of spinal origin plus tabes, and he hoped still that he should be able to find sufficient change in the ventral cells to substantiate that diagnosis. So far candor necessitated him to say that they have not been found despite the careful examination. That there was an interstitial neuritis and myositis upon which lesion the atrophy might possibly have depended, could not be denied.

Dr. Collins hoped that eventually he should be able to show that both motor neurones, the peripheral and central

motor neurones, were degenerated more at the peripheral than at the central end, the degeneration at the periphery going hand in hand with the trophic changes in the muscles. He wanted to put the case on record this year but he had not finished with it, therefore he was not yet quite ready to interpret the pathological findings in connection with the clinical history.

Dr. J. J. Putnam put on record in the transactions two cases of facial atrophy very similar to those referred to by Dr. Knapp and Dr. Thomas.

PHILADELPHIA NEUROLOGICAL SOCIETY.

April 22, 1901.

Vice-president, Dr. Charles S. Potts, in the chair.

Dr. Alfred Gordon reported a case of tea intoxication with spinal symptoms.

Dr. D. J. McCarthy referred to the case of a woman who drank eight or ten glasses of tea daily, and presented the symptoms of postero-lateral sclerosis. The condition was evidently the result of anemia, and as the blood improved the motor power came back and the ataxia disappeared. The woman left the hospital practically well.

He referred to the question of lead intoxication in association with tea-poisoning, and alluded to some work that Dr. Wm. Pepper had been doing in lead poisoning of dogs with the acetate of lead. In one dog there were distinct epileptic seizures, evidently a lead encephalopathy. Microscopic examination of the motor areas showed proliferation of blood vessels, distinct acute periarteritis and round cell infiltration around new capillaries in the cortex. In some sections there were distinct capillary hemorrhages, but whether these were secondary to the epileptic seizures or associated with the periarteritis he was unable to say.

Dr. H. A. Hare said with reference to the possibility of lead poisoning that some years ago he had made an investigation of a large number of instances in which lead had gotten into the body in association with substances in which it was not suspected. One case was that of a seamstress who had been in the habit of biting off lead-weighted thread and chewing the ends. This produced characteristic symptoms.

He also believed that the instances in which tea is used to excess are overlooked in the majority of cases. In this connection he called attention to the fact that at the present time there is no caffeine on the market. What is sold as caffeine is then made from damaged tea. It is therefore possible that where large doses of so-called caffeine are given, symptoms similar to those described may be produced.

Dr. J. Chalmers DaCosta presented a case of trichiniasis.

Dr. F. X. Dercum said that they had considered all possible muscular diseases in diagnosing this case. Trichiniasis was considered and at first rejected because of the absence of gastrointestinal disturbance and because of the peculiar situation of the enlargement. The shoulder and arm muscles as well as the leg muscles are usually affected, but in this case the disease seemed to be limited to one leg, which was one of the most remarkable features.

Dr. A. A. Eshner remarked that it seemed to be more than a coincidence that the disturbance should have developed in a limb that had been the seat of injury. The inference seems justified that the infection was predisposed to by the injury, although it is also not wholly impossible that there was a latent infection which was excited into activity by the traumatism.

Dr. H. A. Hare was inclined to think that trichiniasis was more common than was suspected. In his dissections he had found a body infected from head to foot with trichina, yet an examination of the ante-mortem record showed no note of any symptoms of this condition.

Dr. Joseph Leidy mentioned as an interesting point in connection with the question of the admission of American pork into Germany, that among 384 cases of trichiniasis occurring in Germany not one could be attributed to American cured pork.

Dr. Bochrach presented a case of rhizomelic spondylosis.

Dr. F. X. Dercum thought that there was nothing intrinsically different between rheumatoid arthritis and rhizomelic spondylosis.

Dr. H. A. Hare said that this case resembled one which had been under his care for eight or ten years. After many years of almost total disability, the patient is now able to get around and attend to his business. There is no progress, although the fixation of the spine continues.

He also called attention to a cardiac symptom present in this case which had not been described in the books. It is often found in association with neurasthenia. This is a peculiar sound with the apex beat, resembling the sound produced by striking the closed hands against the knee.

Drs. Wm. E. Hughes and Wm. G. Spiller reported a case of pernicious anemia with changes in the spinal cord.

Dr. James Hendrie Lloyd said that he had been much interested in the degeneration of the spinal cord in pernicious anemia and had reported a case with microscopical findings. Dr. Spiller had emphasised the change in the spinal vessels. The fact that they are not constant shows that they are not essential. That is perhaps still further confirmatory of the probability that there is some toxine in the blood which causes the degenerative changes in the spinal cord. Such toxine may act directly on the neurone. In other words it may cause a parenchymatous degeneration. In the case which he had reported there was marked swelling of the medullary sheath, and this was seen especially in the lateral tracts where the process was just beginning. The blood vessels and neuroglia did not seem to be primarily affected.

One case which he had carefully studied had presented evidences of infection. There was a fluctuating temperature, progressive anemia and more or less catarrhal irritation of the intestine continuing for many weeks. With reference to ascending degeneration of the crossed pyramidal tract, he had seen this in a case of syringomyelia which he reported in 1893, which was one of the earliest cases of syringomyelia and of such retrograde degeneration placed on record.

Dr. Charles W. Burr said that a few years ago he had reported the post-mortem results in seven cases of pernicious anemia. All of these cases had some symptoms referable to the spinal cord. In several, the conditions found after death were much more marked than had been indicated by the symptoms. In one case the ataxia was so great that the patient could not walk, but under treatment she improved so that she could get about fairly well. The post-mortem indicated that the ataxia should have been very great and there should have been a great deal of palsy. There was diffuse disease

in the lateral and posterior tracts. In several other instances where the disease was widespread, the symptoms were slight.

In pernicious anemia there may be marked disease in the spinal cord with little or no vascular disease. He, therefore, did not think that simple thickening of the vessels and mechanical starvation from thrombosis, could in all cases be the cause of the spinal alteration. Nor is hemorrhage always the cause. He thought that we were forced to assume some poison. Either the one that causes the anemia causes the spinal cord trouble, or else the anemia produces some poison which acts upon the spinal cord.

A few years ago, he had bled six dogs repeatedly but none of them survived longer than three months. In these cases, there were no symptoms referable to the spinal cord. In pernicious anemia, these symptoms usually do not appear until the disease has lasted some time.

Dr. W. W. Keen reported a case of secondary suture of the posterior interosseous nerve with complete reestablishment of function.

Dr. James Hendrie Lloyd said that Dr. Keen should be congratulated on having placed on record the first case of operation on this nerve. Some years ago the speaker had carefully examined the reports of wounds of the nerves and he had failed to find any record of an injured interosseous nerve operated on. The posterior interosseous nerve is of special interest to neurologists because it is the nerve largely involved in lead palsy.

Dr. David Diesman reported a case of intermittent claudication.

Dr. Alfred Gordon remarked that the report would indicate that the case belonged rather to the form described by Goldflam than to that described by Charcot. Charcot said that the disease occurred in arterial sclerosis or syphilis. In the other form you have tobacco poisoning and alcohol. The clinical picture is also different. Charcot said that it was manifested by immediate pain when the patient got up. In the other form, pain occurs later.

Periscope.

CLINICAL NEUROLOGY.

SUR L'ETAT ATROPHIQUE DE LA MOELLE EPINIERE DANS LE SYPHILIS SPINALE CHRONIQUE (The Atrophic State of the Spinal Cord in Chronic Spinal Syphilis). E. Long et B. Wiki (Nouvelle Iconographie de la Salpêtrière, 14th Year, No. 2, March-April, p. 105).

From a clinical point of view two principal forms of syphilitic spinal paralysis can be recognized, one acute in onset and the other chronic and generally progressive. Recent work seems to show that the spinal cord affected with syphilis shows in the acute form necrotic lesions, in the genesis of which the arrest of the circulation plays the chief rôle, while in the forms of spinal syphilis in which the evolution is gradual, focal lesions are of less importance and there exists a condition of dystrophy leading to the functional and anatomical decay of the nervous elements. The following case can best be explained by the above hypothesis. Clinical résumé:—Spinal paralysis of slow development, but progressive in type, coming on in a subject who contracted syphilis thirty-eight years previously. During the first three months of the disease, heaviness and stiffness in the lower extremities. Fourth month, sphincteric symptoms and aggravation of the pareto-spasmodic condition. Sensory symptoms appeared in addition to the motor ones. At the end of the first year temporary improvement under the influence of an energetic specific treatment. Then exacerbation followed by complete paraplegia fourteen months after the initial appearance of the disease. Death due to urinary infection. Résumé of histologic examination:—There are three categories of lesions: (1) Diffuse vascular and perivascular lesions, mostly intramedullary; (2) sclerotic lesions in multiple foci constituting the point of departure for the systematic secondary degeneration; (3) a diminution in volume of the spinal cord in the superior two-thirds of the dorsal region. SCHWAB.

TROUBLES NERVEUX INTERMITTENTS D'ORIGINE PALUSTRE (Intermittent Nervous Symptoms of Malarial Origin). Busquet (Revue de Medicine, No. 5, May 10, 1901, p. 414).

Among the nervous affections due to malarial infection, one of the rarest is sphincteric paralysis. The author describes a case of intermittent paralysis of both vesical and rectal sphincters, occurring only at the time of the rise in temperature of the malarial attack and subsiding when it does, and favorably affected by quinine. The author offers the following explanation for the occurrence of these symptoms. For some time Bignami has noted that the brains of individuals who have died of pernicious malaria, while normal in appearance, showed specific lesions when examined microscopically. He also found in the capillaries of the brain a tumefied epithelium pigmented and presenting a certain degree of fatty degeneration and showing numerous Laveran organisms under the form of ameboid bodies. It is quite probable that in this case the parasite, by its presence in the small vessels of the brain or spinal cord, has been the point of departure for the symptoms described. SCHWAB.

LOCALISATION OF NAMING CENTER. G. M. Hammond (Medical Record, Dec. 29, 1900).

The cortical centers of several of our special senses have already been very definitely localized and by thoroughly studying clear-cut cases showing, during life, the loss of some particular function of speech or hearing, all the brain centers undoubtedly will soon be fully and definitely made out. G. M. Hammond has here reported in detail two cases which were fully studied and the lesion localized later, but the findings do not entirely correspond with previous theories. One man was struck on the left side of the head, fracturing the skull, and when he recovered consciousness had almost complete anomia or loss of power to name objects. There was no motor aphasia, no word-blindness. On operating a subdural hemorrhage was found along superior temporal convolution. There was a rupture of the cortex at the junction of the middle and posterior thirds of this gyrus. One year later there was a very slight word-deafness which had been present from the first, but his anomia had entirely disappeared. The second case was one of softening of the middle third of second temporal convolution, secondary to thrombosis. There were no motor paralyses and no disturbances in sensation. There was no motor aphasia and the special senses were normal. He was completely word-deaf, word-blind and agraphic, leading to a diagnosis of the lesion being situated in the superior temporal and angular gyri. The author, therefore, believes that word-blindness and deafness do not always imply that the lesion is situated in the higher visual or auditory centers, but that a lesion of any part of the speech area may so disorder the complex mechanism of the associated speech centers that any form of sensory aphasia may result.

JELLIFFE.

DE LA CRAMPE DES ECRIVAINS ET DES AUTRES AFFECTIONS NERVEUSES PROFESSIONNELLES (Writer's Cramp and Other Professional Neuroses). Thomas D. Savill (Nouvelle Iconographie de la Salpêtrière, 14th Year, No. 2. March-April, 1901, p. 149).

By professional neuroses the author understands all those functional nervous and muscular troubles following the excessive and unskillful use of the muscles normally put into action by the exercise of certain trades or professions. Especial attention is called to the unskillful use, as this plays an important rôle in the etiology and in treatment. Writer's cramp is the most common, but very often cases of telegrapher's cramp, printer's, violinist's, drummer's, mechanic's, etc., are found. In fact in all those trades or professions in which the continuous repetition of the same movement is necessary this condition may be produced. Four cases are described as typical examples of this affection, pianist, telegrapher, mechanic, and a seller of toys, in all of whom the group of muscles used in their profession was affected. The principal symptoms in their order of frequency are, (1) stiffness (cramp or tonic spasm); (2) pain; (3) muscular feebleness; (4) tremor; (5) atrophy, and sometimes hypertrophy. These symptoms at first show a tendency to limit themselves to the group of muscles which have to do more directly with the special professional activity, but later they may spread to the neighboring muscles. Diagnosis is generally easy. In the beginning other functional or organic nervous diseases may be thought of, such as peripheral

neuritis, hemiplegia, multiple sclerosis, etc. In all cases careful examination will show that the first manifestation of the affection shows itself exclusively in those movements which the profession of the patient makes necessary. The pathology of the disease is at present unknown, principally on account of the few cases which have come to autopsy. The location of the lesion must be placed in one of two regions, either in the muscle itself, or in some part of the motor neurone, either in the cell, the nerve, or its muscular ending. The first of these locations can be rejected. The most common etiological factor is prolonged and repeated use of one group of muscles. As predisposing causes are mentioned anemia, syphilis, and influenza. The prognosis depends upon several factors, the time which the disease has lasted without treatment, its stage of development, spasm and tremor being more favorable than atrophy and paralysis. The great difficulty in treatment is that perfect rest cannot, as a rule, be obtained, because the affected group of muscles is needed in the daily occupation of the patient, and the patient frequently must depend upon this for his means of support. Careful and systematic exercise of each individual muscle of the group of muscles affected for short periods of time give the best result. Bromides and hyoscine for the tremor, and electricity and massage, are the main therapeutic resources. In general the results of treatment are favorable.

SCHWAB.

ETIOLOGY OF CHOREA MINOR. T. Frolich (Norsk. Mag. f. Laegevidensk, lxi. 901, September, 1900).

The author deals with 47 cases of chorea minor treated during seven years in the hospital of the University of Christiania. The age of the patients varied from 3 to 16 years, and in 28 of them the disease had begun from seven to eleven years previously; 39 were girls and 8 boys. In 24 cases there was the family history of rheumatism or of psychical affections. Among the 47 patients there were 15 who had had rheumatic fever, either before or during the chorea, and in 16 (34 per cent.) the chorea had begun or had been accompanied by febrile phenomena with angina, articular affections, or erythema nodosum. In these 31 cases the author recognises the element of infection; in 4 others the chorea had undoubtedly followed infectious diseases, such as scarlet fever and influenza, and in the remaining 12 instances there was some slight evidence or possibility of infection. It is therefore claimed that in 80.85 per cent. of the cases the element of infection was definitely proved. Frolich specially refers to an interesting case in which the patient was first attacked with gonorrheal vulvo-vaginitis, then with chorea, with endocarditis, and finally with monoarticular gonorrheal rheumatism.

JELLIFFE.

NOTE ON THE CREMASTERIC REFLEX IN SCIATICA. Gibson (Edinburgh Medical Journal, 1901, ix., 5, p. 459).

The author has noticed in cases of sciatica a marked exaggeration of the cremasteric reflex. This is best elicited by firm pressure over the lower and inner portion of Scarpa's triangle, whose sensory supply is from the anterior crural nerve. This exaggeration often occurs in connection with exaggeration of the knee-jerk and of the gluteal and plantar reflexes, but is much more constant than any of these others. The author has never found it associated with the Babinski reflex. Discussing the method of production of this symptom

he thinks that since the cremasteric reflex center is generally located in the second lumbar segment, while the sciatic nerve arises from the two lower lumbar and upper sacral segments, there is hardly a direct connection between them, and we must conclude that the segments immediately above those from which the lumbo-sacral cord arises, are in a state of hyperirritability in sciatica. ALLEN.

LES EFFETS DE LA LIGATURE DE LA MOELLE CERVICO-DORSALE CHEZ LES ANIMAUX (The Effects of Ligature of the Cervico-dorsal Region of the Spinal Cord in Animals). J. Crocq (Journal de Neurologie, No. 14, July 5, 1901, p. 265).

Crocq believes that complete division of the spinal cord in the cervical or upper thoracic region causes permanent and complete loss of the knee-jerks. Some have supposed that circulatory disturbances in the lumbar region were produced by the compression of the anterior and posterior spinal arteries. To determine whether this opinion is correct or not, Crocq ligated the spinal cord in its upper portion in four rabbits and two dogs and in every case exaggeration of the tendon reflex occurred at once. He concludes that the loss of the knee-jerks in a monkey experimented on in a similar way could not be explained by circulatory disturbances. He believes that the lumbar portion of the cord is nourished chiefly by the abdominal aorta, inasmuch as ligature of this vessel causes loss of the tendon reflexes in the lower limbs, and is nourished very slightly by the spinal arteries. Loss of the knee-jerks in cervico-thoracic lesions therefore is not due to interference with the circulation

SPILLER.

CHOREE ET CHOREE GRAVIDARUM (Chorea and Gravid Chorea). Gilles de la Tourette (Revue Neurologique, June 30, 1900).

He states that of seventeen consecutive cases of chorea at his clinic, only one had rheumatism before or during the attack, and that of several who returned after recovery none had any sign of the latter disease. He concludes that chorea has nothing to do with rheumatism, and that its diagnosis is entirely uninfluenced by the presence or absence of rheumatic manifestations. He maintains further that true Sydenham's chorea never comes on after puberty; he bases this statement on the fact that the two oldest of his patients, girls of sixteen and eighteen respectively, had never menstruated. From this he deduces the further view that chorea gravidarum is not the same as Sydenham's chorea, and holds that many cases so described are really examples of hysterical tremor, while others belong to the category of the convulsive tics, the pregnancy acting as the exciting cause. He admits that a few may be classed under the rare heading of chronic or Huntington's chorea. The author attaches great importance to the fact that in one of his cases the movements persisted after delivery. He believes that with the improvement of diagnosis along the lines he has indicated there will be no further need for the induction of premature labor in this affection.

JELLIFFE.

TABES DORSALIS BEI FRAUEN (Tabes in Women). P. Fehrer (Berlin. klin. Wochenschrift, July 29, 1901).

Statistics were: Lancinating pains, 13 cases; weakness in legs

and back, 10 cases; headache or dizziness, 8 cases; paresthesia, 6 cases; loss of visual power or diplopia, 5 cases; gastric crises, 5 cases. During treatment the symptoms were, in the order of frequency: disturbances of sensation (92 per cent.), lancinating pains (85 per cent.), loss of patellar reflex (83 per cent.), Argyll-Robertson pupil (79 per cent.), Romberg symptom (71 per cent.), ataxia (55 per cent.), disturbance of bladder and rectum (50 per cent.), gastric crises, inequality of pupils, paresthesia, headache, vertigo, girdle sensation, weakness of extremities, ocular paralyses, optic-nerve atrophy, cardiac neuroses, psychical disturbance, diplopia, laryngeal crises. In the treatment of these cases, antisyphilitic remedies and silver nitrate were practically without result. Amelioration of symptoms was obtained in one-half the cases by exercise and regimen.

JELLIFFE.

CONTRIBUTION A L'ÉTUDE DES KYSTES PARASITAIRES DU CERVEAU CAUSÉS PAR LE CYSTIQUE TENIA ECHINOCOCCUS (Contribution to the Study of Parasitic Cysts of the Brain Caused by Taenia Echinococcus). Gothard and Riche de Monsseaux (*Nouvelle Iconographie de la Salpêtrière*, 14th year, No. 1, Jan.-Feb., 1901, p. 19).

Some anatomical observations, together with remarks on the etiology and localization of echinococcus cysts, illustrated by the report of the following case: A man, sixty-nine years old, subject to convulsions, followed by coma. This condition has lasted some years. He was brought to the hospital in such a comatose state and died without regaining consciousness. At the autopsy, as soon as the dura was opened, there was an escape of clear fluid which came from a cyst about the size of a hen's egg situated in the right hemisphere. Microscopic examination showed the presence of parasites adherent to the cavity of the cyst. The pyramidal cells of the cortex showed changes of two sorts, one acute, and the other the result of a long-continued increase in pressure, due to the presence of the tumor. Although echinococcus cysts of the brain are not rare, observations which include the demonstration of the parasite are very infrequent. There are no distinctive symptoms by which the presence of a parasitic cyst can be made known. Some give rise to no signs whatever, others, according to their location, produce cephalæa, vertigo, vomiting, ocular manifestations, Jacksonian epilepsy, paralysis, etc. The progress of the symptoms is usually rapid, rarely lasting over three years. Sudden death is frequent. The positive diagnosis of these cysts may be extremely difficult, owing to the absence of typical diagnostic signs. It is important to recognize the conditions in which echinococcus may develop. It is found most frequently among those who live in close contact with dogs, as the echinococcus is the larva of a taenia found in these animals. These cysts being usually limited and easily enucleated, and not leading as a rule to permanent injury of the cerebral tissue, they are especially favorable cases for operation. In sixteen cases of operation, reported by Auvray, for hydatid cysts of the brain, there were no deaths and seven cures. Exploratory trephining is justifiable in obscure cases according to Flammarion.

SCHWAB.

STEREOGNOSIS AND ALLIED CONDITIONS. C. W. Burr (*American Journal of the Medical Sciences*, 121, 1901, March, p. 304).

The author records examples of the loss of the stereognostic

sense (astereognosis or stereoagnosis, as he prefers to call this condition) and states conclusions, of which the chief are the following:— (1) The ability to recognise objects by handling them depends upon the integrity of the afferent nerves, the cortical sensory area and the cortical perceptive area (*vide* below)—disease of any of these will make it impossible for the patient to recognise objects by handling them. (2) Which form of sensation is most necessary for the recognition of any given object depends upon the qualities of the object. Tactile anesthesia, if sensibility to stronger pressure is preserved, causes little or no difficulty. The space-sense (*i.e.*, the faculty of distinguishing simultaneous impressions), the localising sense and the sense of position are probably the most important. (3) There is a distinct area of the cortex in which sensations produced by handling objects are grouped together to form tactile memory images: this, the tactile perceptive area, is in the parietal lobe and it is not the same thing as the sensory area, though it may be located within the boundaries of the latter. (4) Tactile amnesia includes the cases in which, on account of disease in the tactile perceptive area, the tactile memory images are destroyed. It is not unfrequently associated with mind blindness and, indeed, it is probable that always in recognising objects by handling them we recall from memory a more or less faint recollection of the visual appearance of the object. Auditory memories are less frequently recalled, because less frequently needed to make a complete percept, and those of smell and taste quite rarely. Burr emphasises the fact that we must clearly distinguish between the two forms of astereognosis, peripheral and central. The former is due to failure of one or more of the primary sensations (from disease of the sensory nerves, or of the sensory tracts in the central nervous system); the latter is caused by disease of the cerebral cortex, which interferes either with the proper correlation of the various sensations received from handling an object, or with what Burr calls the "tactile mental images," stored up in a particular part of the cerebral cortex (*vide* above). More stress he thinks, ought to be laid on the tracts which connect the sensory cortical area related to handling objects with other sensory centers, especially the visual, whose associated activity seems necessary for the recognition of objects by handling.

JELLIFFE.

MYOKYMIA, OR PERSISTENT MUSCULAR QUIVERING. R. T. Williamson (Brit. Med. Jour., Dec. 15, p. 1,705).

The symptoms in the following case correspond to those of the very rare affection to which Professor Schultze has given the name of "myokymie," and Dr. Kny (who had previously reported two similar cases) that of "myoclonus fibrillaris multiplex." The writer has only been able to find records of eight cases in medical literature.

A clerk, aged twenty-one, was admitted to hospital suffering from peculiar persistent quivering of the muscles of the limbs, trunk, and face. The left leg had been suddenly paralysed in infancy (probably owing to acute anterior poliomyelitis) and had remained useless. At the age of sixteen it had been seriously injured, through an accident, and amputation had been necessary at the upper part of the left thigh. Two years before he came under observation, he first noticed quivering of the muscles of the right leg. The onset was gradual, and the quivering spread in the course of time to the muscles of the

arms, trunk, face and tongue. There had been no cessation or diminution of the symptoms since their onset. After the amputation of the left leg he had been able to get about with the aid of a crutch, but recently he had found great difficulty in doing so, owing to the right leg frequently "giving way" from the muscular quivering.

The patient was fairly well nourished. There was a persistent rapid quivering of the muscles of the right leg, arms, trunk, face, and tongue. Sometimes one small bundle of fibers contracted rapidly, giving the appearance of fibrillary contraction; sometimes several bundles contracted; sometimes the whole muscle contracted rapidly. The symptom was best seen in the leg, and the quivering affected chiefly the thigh and calf muscles. At one moment a bundle or several bundles of muscle fibers would contract rapidly; directly afterwards a wave of contraction would pass over the whole muscle. This muscular quivering produced a very slight shaking or trembling of the whole leg, even when the patient was in bed. When the quivering was very violent, rapid and repeated slight movements of the foot occurred at the ankle, owing to the quivering of the calf muscles. The arms were affected in a similar manner, but not quite so markedly as the leg, the muscles of the shoulder, upper arm, and forearm being most affected, those of the hand very slightly. In the arms the quivering or contraction did not affect the whole of a muscle so frequently as in the leg. The rapid and repeated quivering of the muscles of the arm and leg continued more or less all day; the muscles were affected in a most irregular manner, and the frequency of the quivering varied considerably.

The muscles of the chest and abdomen presented occasional fibrillary contractions; the muscles of the face, tongue and neck, and the masseters, frequent fibrillary contractions. The eyes were not affected. The contractions continued when the patient was at rest in bed, as well as when he was about. When the arms were held out in front of the chest, the muscular quivering produced a slight tremulous movement of the whole limb resembling that so frequently seen in Graves' disease; but there was not the flexion and extension movements of the fingers or wrist which are seen in paralysis agitans. The muscular quivering and slight tremor of the limbs were very little affected by voluntary movement; they were not diminished thereby; if any change occurred at all, they were slightly increased. The muscular quivering was increased by excitement, and when the patient was undergoing examination. The patient was able to write fairly well, and though the writing was slightly jerky, it was much better than in the various other forms of tremor, with the exception of paralysis agitans. He was also able to draw a fairly straight line on paper.

The patient could perform all the movements of the arms and legs, and there was no localized wasting or paresis of muscles. There was no rigidity of the limbs. The knee-jerk was a little increased. There was no ankle clonus. On attempting to obtain ankle clonus occasionally a few jerks were obtained. The plantar reflex was normal (flexor type). There was no loss of sensibility to touch, pain, or temperature. The sensory cranial nerves were unaffected. There were no mental symptoms. The patient was not emotional or nervous. There was no affection of speech. He often complained of palpitation of the heart, and the pulse was often quick—84 to 108. He complained of frequent sweating.

During the four weeks the patient was in the hospital there

was no definite change; some days the muscular quivering was a little less, but the diminution was never permanent. The quivering continued more or less all day, just as it had done for two years.

In the 8 cases recorded, the ages were from 21 to 27. All the patients were males. Five were peasants or country laborers. One patient was a painter, another a plumber; both suffered also from symptoms of lead poisoning. One patient suffered from chronic double sciatica. In all the 8 cases the legs were most affected. In 2 cases the legs only were affected; in 1 the legs and muscles of the back; in 2 the arms and legs; in 1 the legs and arms but not the hands; in 1 almost all the muscles of the body; and in 1 almost all the muscles except those of the face and neck. In the present case the muscles of the limbs, trunk, neck, and face, were affected. In four cases recovery occurred in the course of a few months; in 1 case there was distinct improvement. The treatment, in cases in which recovery occurred, was, respectively, by warm baths and galvanism, by bipolar faradic baths, and by rest in bed and warm baths. One patient improved distinctly under the galvanic current and warm baths. The etiology and pathology are unknown. JELLIFFE.

ZUR TRIGEMINUSERKRANKUNG ALS INITIAL SYMPTOM DER TABES (Trigeminal Disease as Initial Symptom of Tabes). V. Fragstein (Deutsche med. Wochenschrift, No. 12, March 12, 1901, p. 185).

A man, who thirteen years previously had acquired syphilis, began to have tic douloureux implicating all branches of the right trigeminal nerve. The lightning-like pains in the face were severe and occurred in paroxysms, and gradually became more frequent. After these pains had existed about a year and a half, almost complete paralysis of the right sensory fifth nerve occurred, although taste was preserved; and at about the same time lightning-like pains were felt in paroxysms in the lower limbs, and were associated with girdle-sensation and vesical disturbance. The patellar and plantar reflexes were absent and Romberg's sign was pronounced.

SPILLER.

A CASE OF DESCENDING LANDRY'S PARALYSIS IN A CHILD. Leonard A. Rowden (British Medical Journal, May 4).

Rowden reports this case as follows: boy aged ten, while at play fell lightly about ten feet into an excavation. Was apparently none the worse for the accident until the following day, when he complained of not feeling well and held his head as though he had a slight stiff neck; vomited once after eating lightly. The next day he complained of slight headache and pain in the neck. The day after his temperature was 103, and he was unable to turn his head sideways or to raise either arm at the shoulder joint. No other abnormality was detected. On the day following, however, had complete paralysis of both upper limbs and trunk, together with paralysis of the intercostal muscles, and partial paralysis of the lower limbs. Sensation was not disturbed. There was no headache, no pain, no loss of bladder or rectal control, no rigidity or twitching of muscles, no strabismus. Swallowing was not difficult, and the speech was clear, mentality normal. Towards evening the paralysis of the lower limbs was more advanced, the muscles of deglutition somewhat involved and sensation slightly affected as shown by

lack of delicacy in differentiation. Knee-jerks were absent. At midnight the facial muscles became involved and speech indistinct. The pulse was rapid and intermittent and cyanosis set in. One hour later death ensued. No autopsy was obtained. Rowden calls attention to the rapid course of the disease, the descending character of the palsy, the very slight impairment of sensation, the absence of rigidity, twitching pain, or spasm, the unimpairment of the mental faculties and the control of the bladder and rectum. He does not regard the trauma as a causal factor.

WITMER.

BROWN-SÉQUARD'S PARALYSIS. Woods, of Philadelphia (*Amer. Journ. the Med. Sci.*, Aug., 1900).

The author records a case with the clinical symptoms exactly as described by Brown-Séquard in hemisection of the spinal cord. The patient was stabbed in the back of the neck, and as a result suffered from paralysis of the left arm and left leg. The reflexes were normal, but there was incontinence of urine. On the fourth week some slight power was returning to the left hand, and the next week to the left leg. In the seventh week he was able to walk awkwardly, there still being present a paresis and dragging of the leg. A year later, at the Pennsylvania Hospital Dispensary, he was found to have an excessive knee-jerk and some ankle clonus in the paralysed leg. In the paretic arm the tendon reflexes were also exaggerated. As regards sensory alterations they closely conformed to Brown-Séquard's type—namely, hyperalgesia and tactile hyperesthesia in the paralysed limb, anesthesia and analgesia in the non-paralysed limb. Muscular sense and consciousness of position were lessened in the paralysed limb, but unaltered in the non-paralysed limb. Thermal sensibility was lost in the sound limb and increased in the paralysed limb. In surface temperature the paralysed leg was warmer. Similar differential conditions prevailed as regards the paralysed and non-paralysed arms, and the facts confirm the view of Brown-Séquard that the paths of tactile and painful sensibility decussate after entering the spinal cord.

JELLIFFE.

ARSENICAL PERIPHERAL NEURITIS. Several authors (*British Medical Journal*, Dec. 1, 1900).

A number of observers have reported on a severe epidemic of poisoning by arsenic in the districts about Liverpool and Manchester. The cases of poisoning have occurred in patients who were beer drinkers, and one case is reported to have been the result of arsenical poisoning in stout. The investigation committee of the British Government, as well as the earlier observers, are reported to have found the arsenic in the glucose used in the manufacture of the beer. The symptoms noted have been many and quite bizarre in their distribution. Eruptions of the skin were common, consisting of herpes, erythematous and papular eruptions, scaly desquamation and a peculiar pigmentation, at times suggesting the bronze coloration of Addison's disease. The urinary organs were not often involved; hepatitis was not infrequent and the general digestive disorders were diarrhea, epigastric pain, anorexia and vomiting. Nervous systems were very common and severe in character. Tremor was almost universal, the knee-jerks were diminished or abolished. Numbness, tingling, pain and cramps in the extremities almost invariably pre-

ceded paresis or paralysis of the extensors. The respiratory tract was also involved. Coryza and bronchitis were common manifestations. JELLIFFE.

HYPERTROPHIE OSSEUSE DANS UN CAS D'HEMIPLEGIE INFANTILE AVEC ATHETOSE-CHOREE (Bony Hypertrophy in a case of Infantile Hemiplegia with Athetosis-chorea). Lannois et Fayolle (Lyon médical, Nov. 18, 1900).

The introduction of radiography has enabled the authors to demonstrate the rare condition of bony hypertrophy in the case of hemiathetosis due to cerebral apoplexy in infancy. A case had already been reported by Lannois in 1898, because one of the breasts had undergone hypertrophy. At that time it was stated that the pareto-athetotic muscles had undergone hypertrophy. The author's case together with a hemiathetotic epileptic, were selected for radiographic measurement. Both these cases had distinct muscular hypertrophy, but radiography failed to reveal any corresponding changes in the bones. In a third case of the same nature however, not only the muscles, but the bones were hypertrophic. The wrist of the athetotic side measured 16 cm. to 15 cm. on the sound side. Mensuration was confirmed by the radiographic test. Not only the bones of the carpus but the lower ends of the radius and ulna were distinctly enlarged. The patient had ordinary infantile cerebral hemiplegia of the face and limbs, followed by athetoso-chorea. The affection was due to a hard labor and obstetrical intervention. The author's conclusions are:

This phenomenon may possibly be due to the athetotic movements. Why then does it not always occur along with the muscular hypertrophy? Excessive use besides, does not explain the hypertrophy of the breast in one of the cases, nor the enlargement of the testicle of the paralytic side in a case of Bourneville's. The cause must be trophic. CLARK.

UN CAS DE PARALYSIE BULBAIRE AIGUE CHEZ UNE ENFANT (A Case of Acute Bulbar Paralysis in a Child). J. Kollarits (Nouvelle Iconographie de la Salpêtrière, 14th year, Jan.-Feb., 1901, No. 1, p. 2).

A case of a young girl of seventeen, who, at the age of five years, was attacked by some febrile disorder, during which there developed a bulbar syndrome which has remained constant to the present time. The most pronounced symptoms are difficulty of deglutition and phonation. The cranial nerves are affected as follows: Some ptosis on the left side shows that the oculo-motor on that side is affected. Hypesthesia of the upper gum and of the cheek on the left side, as well as the lower gum results from a lesion in the second and third branch of the trigeminal; the loss of taste and of tactile sense at the base of the tongue shows an affection of the glosso-pharyngeal; the anesthesia of the throat and of the roof of the palate depends upon an affection of the glosso-pharyngeal and of the vagus; the accessory nerve likewise affected, contributes to the difficulty of deglutition; the hypoglossus nerve is completely paralysed, the tongue is flattened and remains inert upon the floor of the mouth; the optic nerves, the trochlear, and the external nerves of the eye-ball and the acoustic are not touched by the morbid process. In respect to

diagnosis, the following conditions are noted and excluded, because of the unusual symptoms which are present, bulbar paralysis, asthenic bulbar paralysis, pseudo-bulbar paralysis, polio-encephalitis, and poliomyelitis with bulbar symptoms. The peculiar symptoms in this case are, first, rapid onset; second, development in infancy; third, absolute stationary condition for twelve years; fourth, the sensory symptoms, in addition to the motor. The author found a number of cases in literature which approach this one in regard to symptomatology; these are given various names, as acute poliomyelitis with anomalous distribution, bulbar encephalitis, etc. The absence of degenerative atrophy on one hand, and the existence of sensory symptoms on the other, prove that in this case there is no analogous condition to that of acute poliomyelitis. It is more probably a condition of acute bulbar meningitis, lasting only a short time, but causing permanent destruction of the nerve fibers in the neighborhood of the bulbar nuclei. SCHWAB.

ON OPERATING ON THE SUBJECTS OF EXOPHTHALMIC GOITER. J. Delpratt Harris (British Medical Journal, May 4).

The patient, a female, aged forty-six, with advanced exophthalmic goiter, died sixty-eight hours after the removal of a cystic tumor of the left breast. Death was apparently due to collapse. Harris deprecates serious operations when complicated by exophthalmic goiter, but when absolutely imperative advises that a course of treatment with remedies of the digitalis class should precede.

WITMER.

TREATMENT OF ARSENICAL NEURITIS. Judson S. Bury (British Medical Journal, Dec. 8, 1900, p. 1629).

As physician of the Manchester Infirmary, the author has had exceptional opportunity to see numerous patients by reason of the recent epidemic of arsenical poisoning at Manchester. Heretofore some seventy to eighty cases were on record, but this epidemic affected thousands. In the treatment followed at the Infirmary, the absolute withdrawal of the cause, beer, was enforced, both because of the arsenic and of the alcohol. Rest in bed is advisable. Massage is distinctly contraindicated. For the relief of the pain hot fomentations are excellent. These are best applied intermittently, a fomentation placed on the affected part for one-half hour and then applied after a lapse of four hours. Vapor baths are of value if the heart action is not affected thereby. Potassium iodide and the salicylates, alone, or in combination, are effectual and the newer analgesics, antipyrin, and phenacetin are valuable in many cases. Strychnine should never be used in the acute stages. The importance of careful nourishment was demonstrated very forcibly. Boiled milk, beef tea, beef extracts, broths and soups are valuable. Peptonised foods are indicated for gastric irritability and at times nutrient enemata are necessary. After the acute stage is over, massage, electricity and tonics are efficacious. Cod liver oil and strychnine are useful, but arsenic is to be avoided. JELLIFFE.

MEDULLARY NARCOSE (Spinal Anesthesia). H. Vulliet (Therap. Monatshefte, Dec. 1900).

In operation below Poupart's ligament, including the genital organs the patients invariably complained of numbness and formica-

tion in the feet after 1 to 3 minutes; in 4 to 6 minutes anesthesia in the lower extremities set in, and 5 to 8 minutes this had reached up to a line somewhere between the umbilicus and the bimammillary space. After the lapse of $\frac{1}{4}$ hour, the sensibility of arms, shoulder and thorax was much diminished. Certain interesting cases are quoted, thus in one patient the entire body became analgesic, another had lost thermic sensibility. After $1\frac{1}{2}$ to 3 hours sensation to pain returned from above downward and in not a few there was ataxia in the legs. Operations on the sexual organs seemed to be especially adapted to this form of narcosis. In hernia and appendicitis operations the method was less uniformly successful. For the neck and upper extremity it proved entirely inadequate. The usual dose employed was between 15 and 20 milligrams. Of after-effect, nausea and vomiting rarely disturbed the patient. Many, however, complained bitterly of headache, which lasted in some cases 2 to 3 days. Col-lapse symptoms were never found. JELLIFFE.

UEBER DIE PROGRESSE DER EPILEPSIE. Habermaas (Allg. Zeitschrift für Psychiatrie. 1901, lviii. s. 243).

The author has made a statistical study of, in all, 937 cases of epilepsy treated at the Epileptic Institute, Schloss Stetten, from 1869 to 1898. Of these 974 were out-patients, 22% were on admission under ten years of age, 58% between 11 and 20, 17% between 21 and 30, while only 2% were over 30.

Psychical disturbances other than weakmindedness were exceptional, 40% he classes as mentally normal, and in nearly one-half the cases the disease had been present less than five years, so that the collection of cases would seem on the whole a favorable one. The conclusions drawn from his various tables he summarizes as follows:

(1) Epilepsy is curable in 10.3% of the cases. (2) 17.3% of epileptics remain free from intellectual impairment. (3) 21% retain full ability to work, 30% have partial ability, while 49% can do no work. (4) The length of life of epileptics averages twenty-five years. (5) In 60% of the deaths, the epilepsy itself is the cause. ALLEN.

EPILEPTISCHE AANVALLEN NA BET GEBRUCK VAN CAMPHORA MONOBROMATA (Epileptic Attacks caused by Monobromate of Camphor). J. K. A. Wertheim-Salomonson (Weelblad van bet Nederlandsch Tijdschrift voor Geneeskunde, Sept. 29, 1900).

Case I.—Boy of eighteen under treatment for pollutions; monobromate of camphor and lupulin ordered. After taking one powder he was seized with an epileptic attack, during which he sustained a dislocation of the left arm.

Case II.—Male, aged twenty. Monobromate of camphor was given for pollutions and neurasthenia. After a single dose of camphor he had a convulsion.

Case III.—Similar to preceding.

This phenomenon has been noticed before. Koester recently recorded a case in which 1 gram of camphor monobromate caused two epileptic attacks. These convulsions represented genuine epilepsy. The cases exhibited subcutaneous hemorrhages and retrograde amnesia as well as other symptoms of the connected disease.

The literature of camphor monobromate has been carefully reviewed by the author. Lewin gives as a terminal symptom in overdoses the production of convulsions and unconsciousness. Huse-

mann states that the overaction of camphor monobromate corresponds to acute camphoresia. Van Jaksch describes the symptoms of the latter, and these include epileptiform convulsions. The bulky ingestion of camphor causes gastritis, coma and convulsions. Eulenburg's Realencyclopädie gives the same account. Recent cases of camphor poisoning usually refer to the presence of convulsions (Craig, Brit. Med. Journ., 11, 660; Spengin, Ibid, 1898, 11, 84). Notwithstanding this fact, monobromate of camphor is continually recommended in epilepsy. It should be given with great caution where a convulsive predisposition is in evidence. CLARK.

EPILEPSIE ET APOPLEXIE (Epilepsy and Apoplexy. Brunet (Archives de Neurologie, March, 1900, lx., p. 224).

Cerebral diplegics are rarely epileptic although more than eighty per cent of infantile cerebral hemiplegics become so. A few of the latter may become diplegic with consequent improvement in the existing epilepsy. The explanation is made upon the hypothesis that bilateral brain palsy tends to a stability or equilibration of brain activity which is wanting in spasmodic infantile hemiplegia. However, such an hypothesis lacks much in real demonstration. Contrary to what would appear to be the case, apoplexy occurs but rarely as the result of true or essential epilepsy. This in a measure accounts for our lack of knowledge of the influence which a well-marked apoplexy would have on an existing epilepsy. A rare and unique case of this kind has been reported by Brunet. In this case of hereditary epilepsy of fifty years' standing, a superimposed apoplexy apparently cured the epilepsy. The case was a woman, who contracted epilepsy after an attack of scarlatina at seven years of age; the father was also epileptic. Typical epileptic convulsions occurred every one or two weeks for fifty years, at the end of which time she suffered an incomplete left hemiplegia. During the next three years the seizures gradually diminished. After this period and for seventeen years, until the date of her death by a second stroke of apoplexy, she did not have another epileptic paroxysm of any kind although very carefully watched day and night for several years. Her mental state also underwent gradual improvement from the time of the stroke and the cessation of the epilepsy. Unfortunately, no autopsy was permitted for studying this clinico-pathological freak. CLARK.

CONSERVATIVE CRANIECTOMY IN EPILEPSY. (1) Thouvenet (Abstract by Mirallié in Arch. de Neurol., Mar., 1900); (2) W. P. Spratling (Philadelphia Med. Journ., Jan. 28, 1899); (3) Mirallié (Arch. de neurol., Mar. 1900).

Opposition to trephining for the cure of epilepsy is steadily growing and the unsatisfactory results are being constantly reported both in this country and abroad. In 1896 Thouvenet published a thesis containing the description of four "brilliant" permanent recoveries of Jacksonian epilepsy by trephining, which finally relapsed after a considerable period of freedom from seizures. Recently Spratling has reported in detail seven cases from an experience of twice that number, in which craniectomy was followed by harmful results to the epileptic by hastening status and dementia. In these cases beneficial results were also reported a short time after operation. Bourneville two years ago presented a careful thesis on failures in craniectomy for the treatment of epilepsy.

Nevertheless, it must be admitted that immunity from epileptic attacks for a few months, usually reported after trephining, is no more misleading nor deceptive in the end than a freedom from epileptic seizures for a few weeks by some new systems of medicinal treatment. Honors appear to be even between the physician and surgeon. Mirallié has but recently reported one of the many failures in his experience of trephining for the cure of epilepsy. The case was different in results from what might have been expected. The patient was pronounced a traumatic case, a man thirty-six years old, who while in vigorous health fell seventy feet and sustained severe fracture of the left side of the cranium permanently destroying the sight of the left eye. Recovery from the fall was uneventful. Notwithstanding, there was no neuropathic history nor a permanent predisposition to epilepsy, four years after the fall the patient contracted epilepsy. The epileptic attacks were typical grand mal and petit mal, but were always followed by symptoms of motor and sensory disturbance of the special and common sense of the right side; including right hemianopsia of the inner half of the field of vision. The disturbances were all transitory, lasting for a few hours only. The epilepsy existed but a few weeks when trephining was resorted to and the depression along the line of the old fracture was removed. The parts beneath the depressed bone were found a little compressed but otherwise they were normal. At the end of five months' immunity from epileptic paroxysms without discoverable cause, the seizures recurred worse than before and continue to exhaust the patient physically and mentally. The bad results in such cases where the very best should obtain, caused the author to take issue with those who advise craniectomy for the cure of epilepsy.

The constantly increasing number of unfavorable reports argue for a change in the existing rules governing trephining in epilepsy; these rules should be more conservative in the future. Although a good family history may obtain and the traumatism be recent, and the subsequent epilepsy be undoubtedly caused by the trauma, even then an operation may prove a failure and leave the patient in a worse condition than before the craniectomy.

CLARK.

PATHOLOGY.

ALTÉRATIONS NERVEUSES DANS LA CARCINOSE (Nervous Changes in Carcinosis). D. de Buck (Journal de Neurologie, June 20, 1901, No. 13, p. 241).

A cancer of the breast was removed from a woman, but it returned within a few months, and a tumor of the liver, probably a metastatic growth, was then diagnosed. The woman began to complain of severe pain in the course of the right sciatic nerve. The knee-jerks were at first exaggerated but later lost, and the Achilles tendon reflexes were lost. Babinski's reflex on the left side, lancinating pains in the lower limbs, objective disturbances of sensation, ataxia, Romberg's sign, retention of urine, and paralysis of the lower limbs were present. The diagnosis of compression of the lombo-thoracic region of the cord from a metastatic growth was made, but no compression of the cord was found at the necropsy. The right sciatic nerve and lumbar posterior roots were degenerated, and diffuse degeneration of the cord, such as occurs in severe anemia, was found. The author believes that in his case the neuritis occurring with carcinoma was not

complicated by gastro-intestinal autointoxication, and he emphasizes the difficulty of diagnosing between diffuse degeneration of the spinal cord and compression of the cord from a metastatic vertebral tumor, when a carcinoma exists anywhere in the body.

SPILLER.

RECHERCHES CYTOMÉTRIQUES ET CARYOMÉTRIQUES DES CELLULES RADICULAIRES MOTRICES APRES LA SECTION DE LEUR CYLINDRAXE (Changes in the Cell-body and Nucleus after Division of the Axone). G. Marinesco (Journal de Neurologie, 1901, March 5, No. 5, p. 81).

Marinesco reiterates a statement that he has made previously, viz., that the cell-body in the hypoglossal nucleus enlarges after division of the axone, and he believes that he has established this fact by careful measurements, although opposite views regarding the hypertrophy of the cell-body are held by Charles Ladame. The enlargement implicates the nucleus and nucleolus, and is apparent three days after division of the axone. Considerable doubt exists as to the duration of this hypertrophy, and the duration depends upon several factors, among which the restoration of the axone is important. Marinesco believes that the diminution in the size of the cell-body does not occur at once when restoration of the cell-body begins, and that the hypertrophy diminishes gradually after forty-five or fifty days, and may still be seen after ninety days. During the period of disintegration of the cell-body the nucleolus appears paler than normal, but is more deeply stained during the period of restoration. The cellular changes are more rapid after resection than after mere division of a nerve, and if sufficient of the nerve has been removed the cell-body atrophies instead of undergoing restoration. The results vary according to the length of the neurone and the point at which the resection is made.

SPILLER.

DES FOYERS LACUNAIRES DE DESINTEGRATION ET DE DIFFERENTES AUTRES ETATS CAVITAIRES DU CERVEAU (Lacunar Foci of Disintegration and Other Different States of Cavity Formation in the Brain). P. Marie (Revue de Médecine, April 10, 1901, No. 4, p. 281).

In this paper Marie calls attention to the fact that the hemiplegias of old people are less often due to hemorrhage or to softening than to the process of cavity formation. These lacunæ show themselves as small cavities with a more or less irregular contour variable in volume, and of a size from a millet seed to a pea, rarely larger. In number they vary from two to eight or ten. Most commonly they are found in the lenticular nucleus. In fifty autopsies they were found in this region forty-five times. The age of such cavities can be determined from the state of granular infiltration in the recent ones, and from the zone of sclerotic tissue surrounding them in the more advanced ones. These lesions are due, in general, to arterial sclerosis plus a senile condition of the brain tissue. Under the effect of this arterial condition, the vessels supplying the brain become altered, the nutrition of the organ suffers, and different regions become atrophied, causing a dilatation of the ventricle and of the perivascular spaces. The vascular lesion progresses, a rupture or an obliteration takes place, from which one or several of these lacunæ results. It was found that softening, and especially cerebral hemorrhage,

were observed exclusively in brains having such lacunæ. In fifty brains with lacunæ, examined in this regard, a hemorrhage was found to have taken place sixteen times, and softening seven times. The most frequent symptom observed is hemiplegia. True apoplexy is rare. The hemiplegia is as a rule incomplete, very little trace of paralysis remaining behind. The tongue and face are seldom permanently affected. Another condition of cavity formation in the brain is the sieve-like state of the brain (*état criblé*). This condition was described first by Durand Fardel. It is due to a general dilatation of the vessels as the result of repeated hyperemic attacks. This condition is frequently found in the brains of old people. It can best be shown in horizontal-transverse sections at the level of the white substance and anterior to the Island of Reil and the temporal pole. It results from an ordinary perivascular dilatation without any definite alteration of the tissues. There is reason to believe that the *état criblé* is due rather to a retraction *en masse* of the cerebral parenchyma than to a local lesion. Isolated perivascular dilatation around one of the lenticulo-striæ vessels at its entrance in the lenticular nucleus is sometimes found. This lesion in its essence is analogous to the preceding one, but is different in aspect and localization. It presents itself usually as a cavity varying in volume from a lentil to a bean. Its walls are perfectly smooth and no trace of histological alteration is to be found in the cerebral parenchyma. There is in all likelihood a dilatation merely of the perivascular spaces. Cerebral porosis: Numerous examples of this form of cavity formation have been reported. It consists of the presence of rounded cavities, more or less numerous, fifteen to twenty being found in one frontal section of a hemisphere. The volume of these cavities varies from that of a hempseed to that of a small hazelnut. Their location is variable, in the cortex, centrum ovale, central ganglia, peduncles, and cerebellum. Histologically there is no modification to be found, no sclerotic, nor inflammatory process. Their origin, according to Arnold and Pick, is due to a dilatation of the perivascular lymph spaces, due to a disturbance of the intra-cerebral lymphatic circulation. The author believes that this explanation is not tenable, but that they are due to post-mortem changes.

SCHWAB.

Book Reviews.

THE AMERICAN YEAR BOOK OF MEDICINE AND SURGERY. Edited by George M. Gould, M.D. W. B. Saunders & Company, Philadelphia.

The Year Book for 1900 has kept up the high standard attained by the preceding volumes and will be highly appreciated by the medical profession at large. All branches of medicine and surgery are covered and everything of interest occurring during the year has been briefly described. The illustrations are numerous especially in the part devoted to surgery and are very well executed.

Having the work divided into two volumes, one for medicine and the other for surgery, will receive the approval of all, as the single volumes are too large and unwieldy for easy handling.

ADAMS.

A CLINICAL TEXT-BOOK OF MEDICAL DIAGNOSIS FOR PHYSICIANS AND STUDENTS, based on the most recent methods of examination. By Oswald Vierordt, M.D. Authorized translation with additions by Francis H. Stuart, A.M., M.D. Fourth American edition. W. B. Saunders & Company, Philadelphia.

The fourth American edition of this work gives proof of the popularity accorded the preceding editions of the most complete work on medical diagnosis yet given the medical profession. The importance of getting at the history and keeping a correct account of the case is well emphasized. The diagnosis of diseases affecting the respiratory and circulatory systems is treated of at considerable length and in an exceedingly masterly manner. The topographical anatomy of the different organs has been described and also their physiology to an extent that would justify a correct appreciation of any pathological change that might take place. The usual routine of examination is adopted, viz., inspection, palpation, percussion and auscultation, and it is pointed out how the best results can be obtained by each of these procedures. The examination of the digestive apparatus together with the liver, spleen, etc., is very full and complete as well as that of the urinary system. The description of the examination of the nervous system is particularly instructive, disturbances of sensibility and motility with electrical examination of nerves and muscles being prominently brought out.

ADAMS.

FOOD AND THE PRINCIPLES OF DIETETICS. By Robert Hutchinson, M.D., Edin. M. R. C. P., Assistant Physician to the London Hospital and to the Hospital for Sick Children, Great Ormond Street. William Wood & Company, New York.

The province of dietetics has too long been given over to long-haired vegetarians, and it is a pleasure to find in the English language a work written in the modern spirit of science which also possesses the attribute of readability. In fact it may be said that the work has literary merit.

Of more interest, however, to the practitioners it is that it possesses scientific accuracy as well. In form it is succinct and yet ample. The writer has drunk deep of the waters of American workers in this field, notably of the memorable researches of Atwater, which author is largely quoted.

We know of no work of recent years which is at the same time authoritative and readable, and cordially commend it.

JELLIFFE.

News and Notes.

FOR MEDICAL REASONS the State Hospital authorities have found it necessary to abolish Ward 13 in the Binghamton State Hospital, New York State. It was found that this number had a depressing effect on many patients whose superstitions were increased by their mental infirmities. There is now no No. 13 in the hospital, the wards jumping from 12 to 14 for the benefit of the patients. It is the first time that the unlucky number has received official recognition by State authorities.

DR. OMAR A. KELL has been appointed a member of the medical staff of the Illinois Eastern Hospital for the Insane at Kankakee, Ill.

DEPUTY ATTORNEY-GENERAL HADLEY submitted a report at the investigation into the methods of the Indianapolis Insanity Trust, in which he states that there had been in the county a total of 237 inquests in 1899, 247 in 1900 and 161 up to June 25 of this year. He also found that the affidavits of insanity were all made in the City Dispensary Department and that no friends of the alleged insane persons were ever called to testify as to their condition. Continuing the report says: "I also found that under the old law, the persons claiming to be medical attendants invariably claimed at least two days' fee as medical attendants. This is clearly illegal under the law. I also found that it was the custom of the Justices making the examinations to hear several cases in one day, in one instance hearing as many as six, and charge for two days' services in each case. It is also a fact that up to June 25, 1901, affidavits were being filed at the rate of 26.8 per month; that from June 1 to June 25, thirty-one affidavits were filed and one examination held, or at the rate of 37 per month; that at that time the agitation in regard to the insanity investigations began, and since that time to the present date (July 25) there have been only three affidavits filed and three examinations held, and this during the hottest season of the year."

THE AFFAIRS of the National Hospital for the Paralyzed and Epileptic, referred to in last month's issue of the JOURNAL, have received partial settlement in the resignation of the Secretary-Director, under whose management the former abuses occurred. A Committee of Organization has been formed to draw up a new scheme for a better management in the future.

DR. THOMAS P. PROUT, who has served for eight years as resident pathologist of the New Jersey State Hospital for the Insane, has resigned.

ONE result of the numerous investigations into the mismanagement of the Bellevue Insane Pavilion is that a well-meaning citizen of New York has offered a reward of \$500 for the "conviction of any person ill-treating an insane person in any city institution."

A STRONG appeal is made by the New Orleans *Times-Democrat* for contributions to supply beds for ninety women in the Louisiana

State Asylum, who are now obliged to sleep on straw mats laid on the floor, owing to the overcrowding of the present accommodations.

A MEETING of boards of managers and superintendents of insane hospitals in Ohio, in June, was largely taken up with the discussion of the need of an institution for the criminal insane in the State.

THE LEGISLATURE of Arkansas failed to provide for the increment of the insane for the succeeding biennial period in its single asylum. The consequence is that no more patients can be received, and there are many local complaints because of this refusal. The legislature grants but \$100 per capita, annually, for maintenance, and bases the aggregate on the existing population. It is now incumbent upon counties to provide local relief, in order to remove from jails, where they are now confined, insane persons who have been refused admission to the State Hospital.

DR. L. PIERCE CLARK, who has served for the past five years as first assistant physician at the Craig Colony for Epileptics at Sonyea, N. Y., has resigned his position to enter private practice.

THE STATE COMMISSION IN LUNACY reports that a part of the new buildings for the Manhattan State Hospital at Central Islip, New York City, will be ready for occupancy within six weeks, when additional accommodations for eight hundred insane will be provided. The buildings have been in course of construction since 1898. When completed they will cover an area over one mile long. Their cost will be \$1,275,000, and the cost of their furnishings \$100,000. The furnishings are being manufactured in the state prisons. When completed the new buildings will accommodate 2,300 additional insane.

A SYSTEM of out-door treatment for insane patients affected with tuberculosis has been in operation at the Manhattan State Hospital for the past two months, and the state commission in lunacy reports that it has been attended with most gratifying results. Some sixty patients have been quartered since June 1 in tents, having wooden floors on the grounds of the hospital. The patients have lived and slept in the tents. The result has been that old and feeble patients have been greatly invigorated, and formerly helpless patients are now able to walk and care for themselves.

GOVERNOR STONE, of Pennsylvania, has granted an allowance of \$50,000 for the establishment of a homeopathic State hospital for the insane. It is hoped that a free site of four hundred acres of land can be obtained at Mauch Chunk, which would give the absolute use of the \$50,000 for the erection of the hospital.

AN INFIRMARY, to cost \$35,000 is to be built in connection with the Central Hospital for the Insane at Jacksonville, Ill.

BIDS were opened at Washington, D. C., for the construction of an extension to St. Elizabeth Asylum, the government hospital for the insane, on August 2. The extension is designated to accommodate one thousand additional inmates. The lowest of the seven bids submitted was \$1,351,082, made by Horton & Hemingway, of Providence, R. I. The appropriation for the purpose is only \$900,000. New bids may have to be advertised for.

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TABLE OF CONTENTS ON PAGE II and IV

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"Wabbling and Weak"

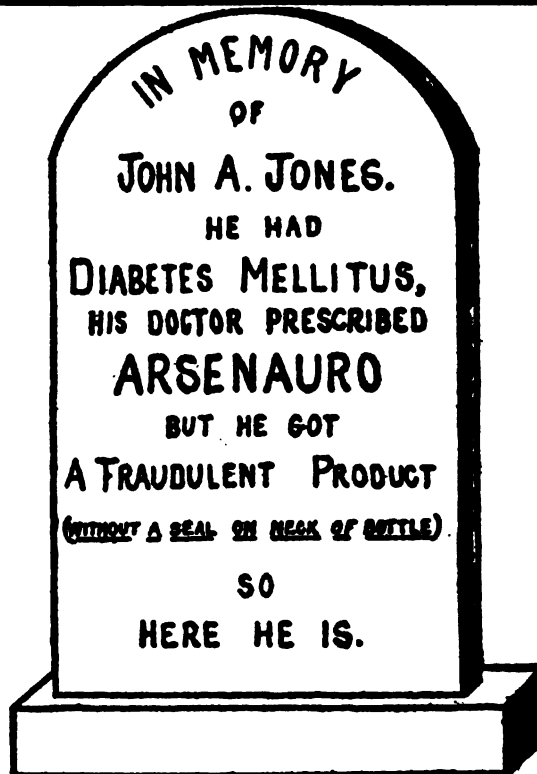
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Original Articles.

THE SEPARATE LOCALIZATION IN THE CORTEX AND
SUBCORTEX OF THE CEREBRUM OF THE REPRESENTATION OF MOVEMENTS AND OF
MUSCULAR AND CUTANEOUS SENSIBILITY.*

BY CHARLES K. MILLS, M.D.,

CLINICAL PROFESSOR OF NERVOUS DISEASES IN THE UNIVERSITY OF
PENNSYLVANIA; NEUROLOGIST TO THE PHILADELPHIA
HOSPITAL.

In 1888, and on several occasions since, the subject which is the basis of my remarks today was discussed at meetings of this Association. The weight of opinion in the Association, as expressed in these discussions, seems to have been against the position which I have uniformly taken, and with but slight modification have consistently held. At the outset it may be well for me to restate this position: I hold to the separate localisation in the cortex and subcortex of the cerebrum of the representation of movements and of muscular and cutaneous sensibility, not believing that the Rolandic and adjacent regions are sensori-motor as has been held by Munk, Hitzig, Bastian, Dana, Starr, Dejerine, and others;

*Read before the American Neurological Association, June, 1901.

that the cerebral motor zone includes only the precentral, postcentral, and paracentral convolutions, and the caudal extremities of the first, second and third frontal convolutions, and the anterior fourth of the superior parietal convolution as usually represented; and that a separate and extensive sensory zone exists, which includes the gyrus fornicatus, pre-cuneus, and postparietal convolutions, possibly also the hippocampal convolution as held by Ferrier. With regard to the subparietal or inferior parietal convolution, the evidence at hand is not as conclusive as for the other gyres included by me in the sensory zone. My views are indicated semi-diagrammatically in Figs. 228 and 229, page 333, of my "Treatise on Diseases of the Brain and Cranial Nerves." The main object of the present remarks is to show that additional facts supporting this position are now at our command, and a special reason for again bringing the subject before the Association is to be found in the fact that several of the contributions to the proceedings of this meeting contain evidence in favor of the doctrine of separate sensory and motor localization. My paper is not intended to be a recital of original observations or a study of the literature of the subject, and yet I trust it will be seen that it is based on both. The recent work to which I shall appeal as upholding the view of the separate representation of movement and of cutaneous and muscular sensibility is entirely that of members of this Association, and may be included under the following heads: (1) Observations on sensory phenomena and especially on astereognosis in connection with cases in which operations guided by localizations have been performed; (2) clinical observations with autopsies and microscopical investigation showing the existence of the *carrefour sensitif* of Charcot; (3) the case of Spiller in which was demonstrated the extent of the motor cortex in man from the cortical degeneration present in amyotrophic lateral sclerosis, the region thus mapped out corresponding closely to the motor zone as given by von Monakow and by the writer; (4) new observations on cases in which operation and autopsy have demonstrated that lesions strictly limited to the motor zone, or to this zone and the region anterior to it, have shown that no objective sensory phe-

nomena were present; and (5) the record of a case of softening in which astereognosis and ataxia were present, but not motor paralysis.

The cases of brain tumor recently recorded by me are confirmatory of the view that the different forms of muscular and cutaneous sensibility have a cerebral localization separate from that of the motor area.¹ They are of special interest in connection with the study of astereognosis. In all the cases in which disorders of sensibility including astereognosis were present, the evidence pointed to the fact that the lesions accounting for these symptoms were located in the postparietal region—the region between the retrocentral and parieto-occipital fissures. The conclusions arrived at were that tumors of the postparietal region, and especially of the superior parietal lobule (parietal of Wilder), give as their most important localizing symptoms disorders of cutaneous and muscular sensibility, and especially astereognosis; other symptoms often present in such cases are the result of compression or invasion of adjoining regions. In referring again to the reports of these cases and the conclusions drawn from their study, I wish to emphasize the fact that at certain stages in some of them true motor paresis was absent.

In addition to the cases observed by me other cases have been recorded, as by Walton and Paul,² and by Burr,³ in which astereognosis and some of the so-called forms of cerebral anesthesia have been present without motor paralysis, in contradiction to the assertion of Verger⁴ that he knows of no case in which cerebral anesthesia existed without motor paralysis. The long-since recorded case of Starr and McCosh⁵ seems to be overlooked by the more recent writers on this subject. It is true that the stereognostic sense in the recent method of regarding this subject was not studied, but the record shows distinct loss of muscular sense without mo-

¹Mills, Keen, and Spiller, *JOUR. NERV. AND MENT. DIS.*, v. 27, May, 1900. Mills, *Phila. Med. Jour.*, April 20, 1901.

²Walton and Paul, *JOUR. NERV. AND MENT. DIS.*, v. 28, April, 1901.

³Burr, *American Jour. Med. Sci.*, v. 121, March, 1901.

⁴*Arch. Gén. de Méd.*, Nov. and Dec., 1900.

⁵*American Jour. Med. Sci.*, v. 108, 1894.

tor paralysis. Let me cite here a brief summary of this case, which was, the reporters say, "comparable to an accurate physiological experiment upon the cortex of the brain, although no such experiment was intended. It was one of traumatic epilepsy characterized by psychical attacks and headache. Trephining and the removal of a small angioma were followed by loss of muscular sense in the right arm lasting six weeks. The operation was performed upon a spot of the brain about the junction of the superior and inferior parietal convolutions, clearly posterior to the postcentral convolution, and resulted in a loss of muscular sense in the opposite hand and forearm, without any disturbance of other sensations or of movement."⁶

Walton and Paul have advanced an ingenious explanation of the cerebral sensori-motor mechanism, comparing it with the mechanism of speech. While agreeing in large part with these writers, I do not fully concur with their views, and the difference is essential. They suggest (1) that we may have the cortical structures receiving impressions of simple touch, temperature and pain, locating these centers as they have been located by the writer and others holding similar views; (2) that we may have a second mechanism for the associative memories resulting in the appreciation of the character of the object felt; and (3) centers assembling the stimuli from the various groups of the second order and also from other sources. If I understand them correctly, this third or assembling center is placed in the Rolandic or motor region proper, and it is with this portion of their suggestion that I do not agree. With them, and differing from Dana, I believe that it is logical and in accordance with analogies to believe that the cerebral sensory mechanism is compound and even complicated. Stated as simply as possible, my view of the cerebral sensori-motor mechanism is that we have (1) certain perceptive centers for cutaneous, muscular and other sensations comparable to the well-known visual and auditory perceptive centers; (2) that we have associative centers perhaps comparable with the speech concept centers, and (3) that we

⁶Mills, "The Nervous System and Its Diseases," Phila., 1898.

have a higher stereognostic center where takes place the final assemblage and arrangement of the stimuli which are to call forth movement by evoking the cells of the entirely distinct motor or executive region. This stereognostic center is to be compared with the propositionizing center of Broadbent in Broca's convolution, and not with the centers which contain the executive cells concerned with motor speech at the feet of the central convolutions. Even Walton and Paul, while they hold that it is a reasonable supposition "that the Rolandic region contains at least the areas representing the principal aggregation of cutaneous and muscular memories whose correlated action acquaints us with the various qualities of external objects," admit that the Rolandic region is not the sole seat of sensation. Burr places the stereognostic center in the superior parietal convolution, where I had previously located it, although it is not yet demonstrated that it is limited to this convolution. The time has not yet arrived for the exact anatomical subdivision of the sensory zone or region, but some facts, anatomical, physiological and clinico-pathological, seem to indicate that cutaneous sensibility has its centers of representation chiefly in the limbic lobe, while muscular sensibility and the stereognostic sense are more especially represented, as has already been stated, in the postparietal region, which includes the superior and inferior parietal convolutions and precuneus. Should this prove to be the case, the losses and disturbances of cutaneous sensibility found in lesions of the two great parietal convolutions are probably to be explained by a cutting of sensory tracts on the way to the limbic lobe.

A word might be said here with regard to Bastian's⁷ view of kinesthesia and kinesthetic centers. As defined by Bastian, kinesthesia, or the sense of movement, is included in part at least in the stereognostic sense. It has been used to include all those impressions which are evoked by muscular movements, including "cutaneous impressions, impressions from muscles, fasciæ, tendons and articular surfaces, and in addition a set of unfelt or but little felt impressions which guide

⁷Bastian, "The Brain as an Organ of Mind," N. Y., 1883.

the activity of the brain by the information (unconscious) which they afford us as to the different degrees of contraction of all the muscles concerned in the production of movement." (Bastian.) While recognizing the existence of such a sense, I believe that its representation should be placed not in the motor, but in the postmotor region.

An acceptance of Charcot's *carrefour sensitif* favors the doctrine of the existence of separate areas of representation for cutaneous and muscular sensibility, for if a tract which conveys these forms of sensibility is compacted together in a special and limited portion of the internal capsule, it is probable that the upward extensions of this tract pass to special cortical regions. The opponents of the theory of separate sensory localization would seem to accept this way of looking at the matter. Dejerine, for instance, one of the strongest advocates of a mixed sensori-motor cortical zone, holds also that motor and sensory fibers are commingled in the internal capsule. A marked tendency has been shown in recent years to abandon Charcot's idea of the sensory cross-roads, in spite of the old facts apparently demonstrating its existence. The belief in the existence of such a tract is not in necessary antagonism with the view that the thalamus is a great basal center for sensation. It is probable that large portions of the sensory tract pass to the thalamus, and that other sensory fibers go directly to the cortex. It is also probable that fibers conveying sensation pass from the thalamus to the cortex. Just where these different bundles end is yet to be determined, but I do not believe that they pass, or even that they mainly pass directly to the motor zone. The contribution to this meeting by Drs. Dercum and Spiller would seem to be a final confirmation of the existence of the *carrefour sensitif*. I had the opportunity of seeing and studying the patient referred to by them in the wards of the Philadelphia Hospital as early as 1892.

The case was included in a series of cases of hemianopsia recorded by Dr. de Schweinitz and the writer in Vol. III of the "Philadelphia Hospital Reports" (1896), where it was recorded as a case of right lateral quadrant anopsia, with ab-

sence of Wernicke's symptom; but with dyslexia, right hemiparesis, partial right hemianesthesia and partial word-deafness and word-blindness. The case as recorded by Dr. Dercum⁸ was one of hemiplegia with exaggerated reflexes associated with hemianesthesia, also with right homonymous hemianopsia. As reported by Dercum and Spiller, autopsy and careful examination were eventually made on this patient. The autopsy showed that the primary lesion was confined to the extreme posterior portion of the posterior limb of the internal capsule. The thalamus was not invaded by it, although tracts of secondary degeneration were traced into this body.

The results of embryological studies in myelination by Flechsig and others are not in antagonism with the view that there are separate areas of representation for sensation, movements and for the assembling processes which intervene between sensation and movements, although some of these may at first sight appear to be opposed to this view.⁹ I shall omit any reference to centripetal neurone systems below the level of the internal capsule and red nucleus. Flechsig traces the upward continuations of neurone systems both of the lemniscus and the red nucleus, although he does not discriminate between these two sets of fibers in his descriptions. He divides all the central centripetal neurones after they have reached the level of the red nucleus and internal capsule into three systems of fibers which become medullated at different ages and can therefore be distinctly separated from each other.

The first of these systems is medullated at about the ninth fetal month, occupies the most posterior part of the internal capsule, and in its upper half the area immediately behind the pyramidal tract. Its fibers coming in part from the median lemniscus are distributed according to Flechsig, exclusively to the cortex of the two central convolutions.

The fibers of the second system which come entirely from

⁸Dercum, *JOUR. NERV. AND MENT. DIS.*, v. 26, April, 1899.

⁹These views are summarized from L. F. Barker's "Nervous System and its Constituent Neurones." N. Y., 1899. In this work numerous references to the investigations of Flechsig will be found.

the thalamus and chiefly from its lateral nucleus, become myelinated one month later than those of the first system, and while one portion of this system passes to the convolutions included by me in the motor zone, the main body of the fibers is distributed in three separate bundles to the gyrus fornicatus, hippocampal convolution and uncinate convolution, in brief, to the entire limbic lobe.

A third system which is medullated still later emerges from the anterior portion of the lateral nucleus of the thalamus, passes into the internal capsule about its middle portion, then subdividing is eventually distributed by more or less separate bundles to the third frontal convolution, the middle portion of the gyrus fornicatus, the anterior portion of the superior or first frontal convolution and the foot of the middle or second frontal convolution.

It is altogether probable that the fibers of those systems which are distributed to the limbic lobe are concerned with the transmission of sensations which have their cortical termini in this lobe. Those fibers which go directly to the convolutions of the motor region are concerned with the more direct cerebral reflexes.

The views here presented with regard to the sensori-motor mechanism accord in the main with the ideas involved in Flechsig's theory of association centers. Both the associative centers comparable to the speech concept center and the higher stereognostic or assembling center would probably be included in Flechsig's association centers. The superior and inferior parietal convolutions and the precuneus form an important portion of his associative system, and in these convolutions the clinical facts here presented would seem to indicate that the associative and stereognostic centers are situated. A little consideration will make it evident that the facts of clinical medicine are in accord with those of embryological research. The muscular sense and especially the stereognostic sense as it is now understood, are higher developments than the senses of touch, pain and temperature. Flechsig has shown that the white matter in the superior and inferior parietal lobules, like that of his other association re-

gions, becomes medullated considerably later than that of the sense centers, those in the limbic lobe, for instance. These association centers furnish a mechanism which makes possible "the working up into higher units of simple sense impressions and of combinations of simple sense impressions of the same qualities and of different qualities." (Barker.)

In this connection I wish by reiteration to make my position entirely clear. I believe that the centers both for the more simple forms of sensibility like those of touch, pain and temperature; and the centers for such higher processes as stereognosis, are entirely distinct from the motor centers proper.

The case of Spiller¹⁰ in which he determined the extent of the motor cortex in man from the degeneration of amyotrophic lateral sclerosis is in my judgment so far as it goes confirmatory of the views held by me regarding separate sensory and motor localization in the cerebral cortex. The diagram obtained by Spiller conforms quite closely to that given by von Monakow and by the writer for the cortical motor area. Spiller examined blocks of cerebral tissue removed from the Rolandic and adjoining regions, and stained these by the Marchi method, and from the results obtained in this way his diagram was made. He says that the portion corresponding to Broca's region shows the presence of degenerated fibers. He was not able to observe degeneration of the gyrus fornicatus below the paracentral lobule, or on the median aspect of the first frontal convolution. No degeneration was found in the parietal lobe from a point a little posterior to the upper extremity of the postcentral convolution. A study of his diagram shows that the gyrus fornicatus, precuneus, superior parietal lobule in the main, and the inferior parietal lobule are not included in the motor region. The areas excluded are in other words those which have always been regarded by me as not motor in function.

The fourth head under which was included the recent work upholding the view of separate sensory localization was

¹⁰Spiller, "Contributions from the William Pepper Laboratory of Clinical Medicine," Phila., 1900.

that of newer observation on cases in which operation or autopsy, or both, have demonstrated that lesions strictly limited to the motor zone, or to this zone and the region anterior to it, have shown that no objective sensory phenomena were present. A number of cases of this sort might be cited, but I shall refer to only two, both reported at this meeting. One of these cases, briefly referred to by me in a previous paper,¹¹ is recorded at length by Dr. Sinkler.

My views as to general diagnosis and location were confirmatory of those held by Drs. Sinkler and Potter, namely, that the lesion was a tumor, and was largely, if not entirely, confined to the motor zone. The patient had no objective sensory symptoms, although she at times complained of a numb feeling in the left side of the face, left arm and left leg, which were paretic, the loss of power being marked in the lower extremity. She had several convulsive seizures chiefly affecting the limbs of the partially paralyzed half of the body. All the deep reflexes on the left side were increased, persistent ankle-clonus being present. The Babinski phenomenon was elicited on the left side. Headache was not conspicuous, but vomiting occurred, and double optic neuritis was present. The most notable point is that objective symptoms referable to the areas of muscular and cutaneous sensibility and the special senses were absent, excepting of course the optic neuritis, which has no localizing value. In this case the autopsy showed the tumor compressing the motor region.

The second case to which I desire to make reference is that of Leszynsky and Glass.¹² It is sufficient for the purposes of my argument to say that in this case the tumor was located in the motor region by motor symptoms; that the growth was successfully removed, and that even the post-operative symptoms were purely motor. A study of the different forms of sensibility was made, but without revealing any sensory symptoms.

The last evidence to which I shall allude in favor of the position taken in this paper is that afforded by a case

¹¹Mills, *Phila. Med. Jour.*, Apr. 20, 1901.

¹²Leszynsky and Glass, *Medical Record*, Sept. 28, 1901.

very recently observed. A middle-aged woman was seen twice by me at the Woman's Hospital in Philadelphia. She had no history of syphilis, but one of malaria, malarial parasites having been found in her blood some weeks before my examination of the patient. The case was also seen in consultation by Dr. Spiller, who was present at the autopsy. I shall omit all points except those bearing on the question of localization. The chief symptoms and signs were optic neuritis of high grade, pain in the occipital region, mental hebetude increasing, stiffness of the neck with retraction of the head, ataxia and astereognosis of the left upper extremity, nystagmus on lateral movement, and sluggish knee-jerks. No true motor paralysis was present. The ophthalmologist had not recorded any examination of the visual fields, and the condition of the patient precluded our determining the presence or absence of hemianopsia. Autopsy showed a large area of softening which to the naked eye was confined to the superior parietal lobe, not extending into the central convolutions. The autopsy was held only a few days before this meeting, so that a sufficient time has not elapsed to allow of a more careful report on the case.

I do not intend in the present paper to go over at length the older arguments for and against separate sensory and separate motor localization in the cerebrum. These can be found in my work on diseases of the brain and cranial nerves, and in Schäfer's new "Text-Book of Physiology" (Edingb., Lond. and N. Y., 1900, v. 2), but I may be permitted a brief glance at the most important of them.

Physiological experiments have shown that destructive lesions of various parts of the limbic lobe cause anesthesia, especially loss of the pain and temperature senses, and in at least a few cases lesions of the gyrus fornicatus have resulted in permanent anesthesia. The well-known fact that lesions of the lateral aspect of the cerebral hemisphere, and especially of the motor region far outnumber those of the limbic lobe and other portions of the mesal aspect of the cerebrum, explains in part the comparatively few clinico-patho-

logical cases demonstrating anesthesia from lesion of the purely sensory zone.

In the encircling experiments in which the motor region was isolated from the rest of the brain, the motor cells would not respond to tactile or other sensory impressions although they would to direct excitation.

When removal of blocks of the motor cortex was carefully done the experiments were not followed by anesthesia.

It is only necessary to refer to the numerous recorded cases of lesion of the motor cortex without impairment of sensibility, and also to the cases in which excision of the human cortex during surgical operations has likewise not resulted in anesthesia.

The strongest case made out in favor of a Rolandic sensori-motor cortex is that which has been built up from a study of cases of lesion in this region, or alleged to be in this region, in which sensory as well as motor phenomena have been present, but if every such case were carefully analyzed a satisfactory explanation of the apparent contradiction would be forthcoming. I shall recall here a few of these explanations. Some of these sensory disorders are hysterical or at least functional. Subjective sensory disturbances should not be given weight, as these may be present in pure motor paralysis, and are largely the result of suggestion. Circulatory disturbances in parts beyond those included in the paralyzing lesion account for some such cases, according to Legroux and de Brun,¹⁸ and pressure on neighboring parts accounts for the impairment of sensation in other cases. Defects of sensation are sometimes due to local causes in the paralyzed limbs, as to extreme coldness or lymph accumulation. Another argument made use of by Schäfer is not given the weight which it deserves. In a few words it may be expressed by saying that as all cerebral sensory areas are connected by association fibers with the motor area, it follows that a lesion in the motor area will sever this connection. The effect of such severance may be felt for a time at least, not only in the motor area and its projections, but also in the

¹⁸Legroux and de Brun, "L'Encephalon," 1884.

parts from which it is isolated, namely, in the sensory and association regions; and not only is this true, but a real degeneration or involution of those parts of the nerve fibers which are proximal to the lesion occurs, hence we may have both temporary and even persistent sensory phenomena as the result of a lesion not in the sensory sphere.

Owing to the fact that the motor and sensory regions are co-terminous, lesions mainly in one region frequently invade to some extent the other. Every case should be excluded from a collection intended to prove that the Rolandic region is sensori-motor, in which the lesion described extends even for the fragment of an inch into any part of the great encircling sensory region. The greatest care should be taken by those who collect data of this kind to accurately describe the exact limits of the lesions. It will, I believe, be found that very many cases included in the well-known collections of cases used by the advocates of a sensori-motor zone, are not cases in which the lesions are strictly limited to the motor zone as described in this paper. All cases of recent operation on the motor zone or of recent hemorrhage into this region should be carefully sifted before they are accepted as evidence. By pressure, bruising and infiltration, the influence of lesions of this character is usually extended beyond the area of the lesion, or what is supposed to be this area.

DISCUSSION.

Dr. G. L. Walton said that there is one thing we must remember in connection with an investigation of separate cases. A great many individual cases have been produced as absolutely proving this or that, but a very little experience with the study of these cases will convince us that we cannot draw definite conclusions from any single case, or any half dozen cases. By definite conclusions he meant deciding, because we find a lesion in a certain region, that this region is the center of the function which is lost. Dr. Mills himself had elaborated on this subject particularly with regard to operative cases. To realize this fact we only need to remember the effect of operation upon distant parts of the brain with whose function we are familiar, for example, Dr. Walton had seen a case in which a mere bit of cortex was removed from the upper Rolandic region, no further damage being done, as far as one could see,

but after operation the patient had mind-blindness and word-deafness. We certainly would not draw the conclusion that these functions have their seat at the upper end of the fissure of Rolando. When we come to study cases in which no symptoms were produced before operation by a tumor in the Rolandic region or elsewhere, and to study the symptoms that took place after operation, which set of symptoms are we going to attribute to that locality? Dana quotes a case in which a large tumor was found in the Rolandic region which had produced no symptoms before operation, but after operation most extensive loss appeared; including sensations of pain, touch and temperature as well as the stereognostic sense. Now, personally, in a case like this, if either set is regarded as final we should choose the ante-operative symptoms, for these, if any, symptoms are to be attributed to the lesion itself. Dr. Walton was arguing against himself a little, because this case would indicate that the Rolandic region is free from sensory function, a view with which he did not agree. We all know, however, that a tumor may be found in a certain situation which we recognize as the seat of a certain function, and yet the function not be lost. This only illustrates the fallacy of depending on single cases. What we can do is to study groups of cases. He had recently looked over the carefully reported cases, among Dana's last 25 cases, and the cases of Verger, and he had found that the stereognostic sense is often lost alone in lesion of the central convolutions, whereas cases in which both the fissure of Rolando and the parietal region are affected are apt to lose not only the stereognostic sense, but also pain, touch and temperature. If we may draw any conclusion from such a study, we should draw the conclusion that the stereognostic sense is situated in the Rolandic region, and pain, touch and temperature more posteriorly. But he did not claim for a moment that the study of one group of cases proves even this fact. He merely said that such study is suggestive, and that if we start out with the preconceived idea that this is the distribution, we shall be surprised to find how the cases fall in line, as it is equally true if a person starts out with any preconceived idea he can fit almost any case to his theory. The same cases have certainly been adduced more than once to fit different theories. There seems to be very little difference between Dr. Mills' present position and the position recently advanced in the paper by Dr. Paul and Dr. Walton to which Dr. Mills had alluded. The only difference as Dr. Walton understood it is that instead of placing the stereognostic sense in the Rolandic region Dr. Mills places it a little more poster-

iorly. Dr. Walton agreed with Dr. Mills that Broca's convolution is not a motor center in any sense of the word, and that the stereognostic center, if there be such an one, is not a motor center. From his point of view the stereognostic center represents an aggregate of memories of touch, pain, temperature, sights, sounds, and even memories of the words which are used in connection with the movements we are about to make, and the objects we handle. Now, no one can absolutely say, and no one will, perhaps, ever absolutely be able to say, whether this aggregation takes place in the Rolandic gyri or the anterior part of the parietal lobes. Perhaps Cajal has led the way to solving the problem in his recent study of the anatomy of the cortex, in which he shows very clearly that there is a distinct difference in the formation of the posterior and the anterior Rolandic gyri; whereas the anterior Rolandic gyrus has many large and middle-sized pyramidal (motor) cells, there are many less of these in the posterior central gyrus and an entirely different set of nerve fibers, nerve plexuses, giving the associative cortex type. Cajal suggests that there is either a different kind of motion carried on posteriorly, or perhaps, that the posterior gyrus is sensory and the anterior motor. The latter suggestion would fit very nicely with the supposition that the stereognostic sense is situated in the posterior Rolandic gyrus and motion in the anterior; Dr. Walton agreed with Drs. Mills and Dercum that the sensory and motor functions are separate. Certain cases have been reported. Dr. Walton had seen two or three cases in which sensation was lost without motion; these cases are so few that Dana practically denies them and Verger regards them as very exceptional. We may certainly draw the conclusion that these centers, though distinct, are very close together. Dr. Walton remembered one case of Rolandic lesion in which the stereognostic sense was at first lost without loss of motion, but in a few days loss of motion followed. The centers may overlap. Perhaps, as Horsley suggests, the small cells are sensory and the large cells motor, in which event the sensory cells might easily overlap the motor cells which are to carry out the action which has its concept in the sensory cells. Dr. Walton thought that Dr. Mills has to explain away many cases of Rolandic lesion, with loss of stereognostic sense, by assuming that a different region is implicated, and it seems more reasonable to attribute this function to the central convolutions.

Dr. P. C. Knapp said it was somewhat interesting to hear Dr. Mills change his position from that which he held six years ago when he admitted that the sensory center extended

as far forward as the fissure of Rolando. He had apparently gone back half an inch if not more. At that time Dr. Mills admitted that the center did extend to the fissure of Rolando. The clinical evidence, however, in favor of sensory distribution up to, if not anterior to the Rolandic region seemed to Dr. Knapp very strong, as he had held when he read his paper upon the subject eleven years ago before this Association. The evidence, however, as to a center for tactile gnosis or stereognosis is as yet somewhat indefinite. *A priori* we must admit that stereognosis is a cortical function, yet we can not determine the exact center for that cortical function on the evidence of many of the reported cases any more than we can determine the evidence in favor of a center for visual gnosis or auditory recognition in those with defective hearing or sight. We must find that the patient has absolutely normal sensibility in every other respect. We cannot diagnosticate visual agnosia until we demonstrate that the patient has a clear visual power. We cannot demonstrate that a patient has psychical deafness until we have demonstrated first that the patient has a perfect auditory faculty. So, until we have demonstrated that the patient has a perfectly normal tactile sensibility in all its forms, which is a most difficult process, we cannot demonstrate conclusively a center for stereognosis. We cannot be absolutely certain of our center for cortical recognition of tactile impressions, inasmuch as we know that in lesions of the sensory tract lower down we very often have from the defective sensibility defective recognition. Dr. Mills had, Dr. Knapp thought, overlooked to a considerable extent the developmental and anatomical relations of the sensory tract, the demonstration that the sensory fibers do pass into the Rolandic convolutions as well as into the parietal, and he had laid altogether too little stress upon the large number of clinical cases of lesion of the Rolandic region in which there had been very definite loss of sensory function.

Dr. F. W. Langdon said he had recently had under his care a case that perhaps should contribute a mite to this discussion. The patient, a married woman, 24 years old, with a child about a year old, for seven years had had severe epileptic convulsions, typical grand mal attacks with unconsciousness, and cry, and had bitten her tongue at various times. She had commonly two or three of these attacks a day, sometimes six, and rarely went a week without two or three except when under the influence of bromides given in enormous quantities. When she was brought to Dr. Langdon's office she was in a state of mild dementia from the administration of bro-

mides for nearly a year. They did not control the attacks, but made them milder. She had numerous mild attacks. She was practically disabled. Dr. Langdon recommended that she be put to bed for a week or two and given diluents and liquid diet, with strychnia and arsenic. She came back inside of ten days a different person, bright and active, but the convulsions recurred. The attacks began in the left little finger with a twitching, and sometimes extended to the wrist and sometimes not. The finger or hand would twitch for half a minute, after which a generalized convulsion would often follow; and she would have three or four of these attacks daily. Sometimes twelve or fifteen of the mild Jacksonian attacks would occur in a day, even when the severe attacks were modified by the bromides. The bromides did not stop the Jacksonian attacks, but made the severe attacks milder. She had no defect of tactile or temperature or stereognostic sense in any way at the second examination, and the motor power was not notably deficient in the left hand. After watching her two or three weeks, Dr. Langdon advised the opening of the Rolandic area over the hand center. This was done by his colleague, Dr. E. W. Walker. The scalp was shaved and no evidence of a scar was found. At the operation, which included the removal of a two-inch trephine button, a thickened, softened, degenerated condition of the dura was found over less than one inch of that area and the dura was fused with the arachnoid and the pia and cortex, causing a distinctly limited localized pachymeningitis of degenerative character, the tissue so friable that it would scarcely hold a ligature. Nevertheless the membranes were separated as well as possible, the probe was passed under the dura, and everything was done to relieve the supposed irritation at that point. Perhaps more was done by the removal of the button of bone than anything else. The stereognosis before the operation on numerous occasions, was perfect, as she recognized coins, etc. Less than six hours after operation she had a severe convulsion which was the only one she had for the next three weeks; and then a second one was due to fright evidently. On the second day after the operation she had a marked weakness in the hand, and this advanced so that she could not grasp anything, and then the stereognostic sense having been tested she could not recognise anything, even things she was familiar with before, such as coins, pen-knives, etc. Asterognosis was absolute about ten days or two weeks, and then sensation began to come back along with motor power. Motor power came back first, and then the ability to recognize objects, and when she left the hospital four weeks after the

operation, she had good use of the hand and good appreciation of tact, pain, temperature and stereognosis. Of course we cannot say because the operation was limited to a small area that the effusion was also limited to that area, but the case bears upon the question at present under discussion, and so far as it goes would locate the function of stereognosis as applied to that segment of the limb, in the same area as the motor power and ordinary sensation.

Dr. Wharton Sinkler said that in his case to which Dr. Mills referred there was a tumor as large as a hen's egg springing from the dura and dipping down into the Rolandic fissure, separating it and involving by pressure only the anterior and posterior Rolandic convolutions. In this patient there was no astereognosis, no disturbance of pain or temperature sense, and only mild motor phenomena. In Dr. Sinkler's experience astereognosis is more constantly associated with disease of the thalamus than with any other part.

Dr. Theodore Diller spoke concerning a patient under his care. In brief, this patient presented the general symptoms of brain tumor, that is to say, he had headache, optic neuritis, vomiting and had had a number of general convulsions. There was no motor paralysis, and no disturbance of common sensation, and no disturbance of heat, cold or temperature senses; but there was absolute astereognosis in his right hand. The right foot was tested—of course, tests could not be made so accurately in the foot as in the hand—and seemed to show no astereognosis. The question of localization might be decided by operation or autopsy or both very soon, and Dr. Diller thought he might have something further to report next year. In the mean time, he would be very glad indeed to have Dr. Mills tell him where to make the trephine hole.

Dr. James Hendrie Lloyd thought that every neurologist ought to try to get himself on record when it comes to a discussion of localization of sensation, especially the stereognostic sense. He wished to say merely this: A similar discussion had been held in Philadelphia some time ago. At that time Dr. Lloyd called attention to the fact that the stereognostic sense is a very different thing from the mere sensorimotor reflex function of the cerebral cortex; in other words, the sense of location in space, location of form, location of what we might call the distensible qualities of matter involves a distinct psychological function, and we have every reason to suppose from the standpoint of physiological psychology that such a physiological function should have some location in the cerebral cortex. He did not think we have any posi-

tive clinical or experimental grounds for saying that the mere tactile sense, as we know it, can be accurately localized in the cerebral cortex; but when we come to this very complex psychological function of distinguishing the qualities of space, there we have to suppose that there is an intellectual act which can only, according to our ideas of cerebral function, be localized somewhere in the cerebral cortex. As to this localization we have some clinical grounds for believing that it is localized in a certain area of the cortex. The case to which Dr. Mills had referred of brain tumor is now quite a classical one, one in which Dr. Lloyd was privileged to express an opinion before that case was brought to operation, and basing his opinion upon experience with a preceding case in his clinic at the Philadelphia Hospital, he expressed an opinion independently of all others that the lesion was probably in the superior parietal lobule, and there is where the operation accurately revealed that lesion. The precedent case upon which he based that idea was one which was not a tumor, but a cerebral hemorrhage breaking through and breaking up the cortex in the superior parietal lobule. In both those cases there was a very evident loss of the stereognostic sense. It seemed to him that it is merely logical to suppose that this intellectual function, this gathering together of sensory impressions and making out of them an intellectual concept which is necessary to localise objects in space and to localize their shape, and size and weight, must have a localization in the cortex, and that these clinical cases tend to show that that localization is in the superior parietal lobule. That is the position, so far as he could see it, which so far our clinical knowledge allows us to take.

Dr. Joseph Collins had very little to say about this matter at this time because he had had no experience to cause him to change his views of the subject which he had heretofore expressed before this Society. So far as his own experience went the sensory perceptual area of the brain coincides entirely and wholly with the motor area. He was not denying, however, that that portion of the cortex immediately behind and bordering the Rolandic area, the anterior portion of the parietal convolutions is not concerned as well with it. He believed upon the evidence that had been furnished by Dr. Mills and by others, that it is, but so far he had had no personal experience which led him to maintain that it is. Dr. Collins said that he could relate one or two cases which he had had the past winter, that have some bearing on this matter. One case he had operated on a few weeks ago in which a subcortical tumor, immediately subcortical,

had not wholly pierced the cortex, and was in the Rolandic region and produced the most typical astereognosis that he had ever seen. He did not know whether there was any other lesion in this woman's brain or not. Apparently the astereognosis, as well as the Jacksonian epilepsy in this case, was dependent on the growth in the middle of the Rolandic region. He was firmly of the belief that there is in reality no center for stereognosis. He believed that he was in accord in this matter with Dr. Burr who says that stereognosis is not perceptual, but the sense is a conceptional one. This position he understood to be at variance with Dr. Lloyd's. Dr. Collins did not believe there is a single area in which this intellectual process is situated. He believed there are many areas of the brain through the activities of which we get perceptions, and apperceptions that contribute to stereognosis. One of these is the Rolandic area, another may be the parietal lobe, and another the frontal lobe. As he stated in the beginning, all he wished to say was to reiterate former expressed opinions which were in accord with the Chairman's and Dr. Dana's. At the same time he was impressed with the evidence that Dr. Mills had brought forward in support of his contention.

Dr. Hugh T. Patrick said that the matter must turn on the evidence of more facts; facts such as have been demonstrated today; that is, cases examined with scrupulous care, both before and after death, with particular reference to this question. So many of the previous cases have been observed not with particular reference to sensory disorder, and particularly not with special reference to the so-called stereognostic center. He was not prepared to take his stand with the extreme localizationists, but he thought we must concede that there are some places in the brain which subserve sensation especially, and it might be in quite a restricted manner. Queerly enough, the day he left home he saw almost the counterpart of the case reported by Drs. Dercum and Spiller, of course without necropsy. The woman had practically no paralysis. There was very distinct sensory disturbance and hemianopsia. Last winter, he had under his care and under constant observation for a number of weeks, a case of what must be typical astereognosis of one hand. There was no paralysis that he could detect, and a very minimal amount of sensory disturbance, no thermo-anesthesia, yet her astereognosis was very pronounced, though confined to one hand.

Dr. Patrick added that a diagnosis of hysteria had been made by a very competent man, but after weeks of observation Dr. Patrick was convinced it was not a case of hysteria at all. There was only one conclusion to be reached; that

wherever that woman's lesion is, it must be in such a place that it does not interfere with motion, but does interfere particularly with this peculiar, complicated, composite stereognosis, and interferes very little with the faculty of common sensation. With regard to astereognosis, it seemed to him that it may and should be produced by lesions variously located. It is a most complicated affair and the cutting of fibers running to a suppositional center from different and possibly widely separated regions of the brain could easily interfere with such a mechanism.

Dr. Joseph Sailer said that about a year and a half ago he studied a case of hemiplegia in which astereognosis was present, and he believed it was in that paper that the term astereognosis was first used. It occurred to him then and since, for he had seen a number of other cases in which the condition was present, that we cannot regard astereognosis as a sharp, distinct, localizing symptom, although in the majority of cases there seems to be a good deal of reason for accepting parietal localization. Dr. Sailer looked up as many cases as he could find, and had come across others under various names in the older literature, because the term stereognostic sense was not employed very extensively even after Hoffmann's paper, and even Oppenheim in '94 used the word "Tastsinn" to designate it, and other cases have been described under the same term. In some cases the parietal lobe was not involved, and there were lesions in other parts of the brain. Dr. Sailer saw a typical case of astereognosis last winter in a patient suffering with locomotor ataxia, in which all forms of sensation were normal in the part except a slight degree of disturbance of the muscular sense. He thought in a good many of the cases recorded there has not been a sufficiently careful study of the peripheral sensations that have been disturbed, because in a majority of cases when we have a loss of the tactile sensation—he thought Dr. Burr had placed one case on record in which it is not so—the stereognostic sense is necessarily lost. When other sensations are lost it may or may not be disturbed. There seems to be a curious irregularity about this. Dr. Dercum holds that the spacing sense, which is a term for a rather crude idea in psychology, is very important. Dr. Sailer believed that the localization sense combined with more or less disturbance of the muscular sense was a very important factor. Another point that ought to be well considered is the transient loss of stereognosis. He had reported a case with left hemiplegia which had persistent astereognosis in the left hand and transient astereognosis (for about thirty-six hours) in the right

hand. In this case it might be due simply to the general cerebral disturbance and not to any focal lesion that would involve the fibers from the right hand to the brain, or the centers in the brain. He agreed with Dr. Patrick that what we need in the whole study is more facts and also more attention to the details of sensory phenomena as they occur in the different cases.

Dr. Hugh T. Patrick in regard to the practical applicability of this separate sensory area, said that some of the most brilliant localizations he had made had been made on the assumption that the post-Rolandic area was sensory. He must also say that some of the most brilliant errors he had made had been made by proceeding upon the same assumption. One case, not operated upon, seemed to be perfectly conclusive. She came to the necropsy table and a small tumor in the leg center (where of course it was supposed to be) was found, but not posterior to the Rolandic area, where it had been localized on account of sensory symptoms, but well to the front of it, and that tumor was not one which could well have produced symptoms at a distance. It was small, not larger than the end of the thumb, and infiltrating. There was no reason to believe that that tumor had any pressure effect. In fact, when the brain was cut it looked like a bruise, and a very competent pathologist who was present when the incision was made said, "I am not sure that it is a tumor at all." It was simply a localized discoloration, and there was no evidence that it exerted any pressure whatever on surrounding tissues.

Dr. Mills asked whether Dr. Patrick were sure there was no infiltration at all?

Dr. Patrick said that subsequent microscopic examination was made and the delimitations of the growth, a glioma, were very neat, but it had infiltrated the cortex, a cortical tumor, and extended but very little beneath the cortex. It began in the brain tissue, was not adherent to the membrane, and it was impossible to make out how it could have exerted any influence on the post-Rolandic region. It did not go deep. The whole growth was not bigger than the last phalanx of the thumb.

Dr. Joseph Collins asked Dr. Patrick to say whether or not there were in this case sensory phenomena and astereognosis.

Dr. Hugh T. Patrick did not know whether there was astereognosis or not. There were sensory symptoms and on account of them he had made the localization in the post-Rolandic region. He could not detail the sensory symptoms

as this case occurred three or four years ago, and he had not refreshed his memory by consulting his notes. He simply stated the fact that it was an example of brilliant error in localization. The tumor was in the leg center in the front of the Rolandic region. It was wholly in front and not wholly behind where he had supposed it probably was.

Dr. Charles L. Dana said that when he first began the study of this subject, his conclusions were that the sensory zone overlaid the motor zone, and that they were pretty closely identical, though no single sensory zone or center had any such sharp definition as the motor centers had.

He still believed that the cutaneous and muscular sensations have a rather diffuse representation in the cortex of the brain, each particular part of the skin having quite a large center, and probably one in each hemisphere. He thought it is the general view of those who claim identity of motor and sensory centers that the latter extend perhaps into the prefrontal convolutions, and certainly back into the parietal lobe. He had always contended that muscular sensations were represented in the inferior parietal lobe.

Three weeks ago he had a case in which Dr. Murray removed a tumor from the inferior parietal region back of the posterior central convolution. The man had a slight amount of right hemiplegia; he had a little paresthesia of the hand and of the leg; absolutely no objective disturbance at all, no astereognosis, none of the loss of tactile or motor touch, and no distinct anesthesia. The tumor was a sarcoma infiltrating the inferior parietal lobe just behind the posterior central lobe. Some time ago a surgeon cut out practically the larger part of the paracentral lobule in a case of Jacksonian epilepsy. The patient made a good recovery surgically. There was no infiltration, and no extension of the disease, and the patient had hemiplegia most marked in the leg, and with it some hemianesthesia. Those are the old arguments Dr. Mills said he has not brought forward. It seemed to Dr. Dana as long as we find over and over again that cutting out a piece of the motor cortex produces in a certain percentage of cases anesthesia or a certain amount of anesthesia; we cannot deny that the motor cortex has something to do with the representation of cutaneous sensation.

With regard to the definite localization of the center for stereognosis in the parietal lobe, in the analysis of the case he first investigated of lesions of the motor cortex and published in a paper about four or five years ago, he came to the conclusion that the center for motor touch was in the central convolution. The very earliest sign of disease of the cen-

tral convolution was a little incapacity of the fingers, hand center, to appreciate the nature and locality of objects in them, and upon facts which he saw and collected regarding that point, he drew up the theory of a sort of aphasia of motion which it seemed to him is practically the same thing that was worked out later, which Dr. Dana thought Dr. Walton alluded to in his paper. At that time it seemed that the most characteristic sensory symptom of slight degree of lesion of the motor cortex was loss of this motor touch. If Dr. Mills denies that we shall have to continue the argument.

Dr. C. K. Mills said it was manifestly impossible for him to go over in detail the remarks which had been made in the discussion, not that the facts and real arguments against his position are many; they are exceedingly few. In the whole of this discussion the only two new facts which seemed to have any value are embodied in the case presented by Dr. Patrick and possibly that presented by Dr. Collins. As for Dr. Knapp (we are never personal in this Association) he had made a single contribution to this subject, which Dr. Mills thought could be explained otherwise than Dr. Knapp would explain it. His remarks on Dr. Mills' paper were simply to say something had been said which was not asserted. It is true Dr. Morton, of New York, at the last meeting of this Association, held in Boston, in a flippant and somewhat amusing manner said that Dr. Dana had led him (Dr. Mills) to water at that trough which is called the Rolandic fissure, or something of this sort. Dr. Mills did not acknowledge that he had brought his sensory area to that fissure, and he would defy Dr. Knapp to find anything on record which proves that he did. Even if he did this, still the main point of his contention remains that the largest part of the Rolandic area is now acknowledged by these gentlemen to be motor. Nothing to the contrary has been said. Dr. Knapp said something to the effect that we should in all the cases that had been examined for astereognosis have known their previous condition as regards sensation, etc. In Philadelphia Dr. Mills' colleagues, if not himself, do examine as to normal conditions when they have a chance to do it, to suggest anything else was a very trifling sort of argument to make against a position of the kind taken by Dr. Mills. Dr. Mills was glad that while it was asserted that he was led to this fissure, that he had been able to assist in leading two-thirds of the members of this Association to that motor area which he believed to be a purely motor area.

With regard to Dr. Collins he had given one case which may perhaps be disregarded because he had not been able to

limit its subcortical extensions, at least as yet. Otherwise, as much as Dr. Mills admired his argumentative powers, really he saw nothing in his remarks but a repetition of statements as to his belief.

He could go over all the old arguments on this subject, giving from Shaefer or from his own book, the proper arguments in support of his position, but his object was chiefly to present four or five new points with regard to this matter. With reference to the remarks of the President, he should say that a single case may have very great value, many cases of the same sort of course having much more value. A single case thoroughly studied, of lesion of the motor cortex, is of great importance. Nothing was more striking to him in his discussion than the one case which Dr. Dercum and Dr. Spiller had presented to prove the existence of the *carrefour sensitif*. We have waited a score of years for that case, and now have it, and it is a good one. It is time for members of this Association to acknowledge facts; it is time we should stop simply collecting cases in which it happens that sensory and motor functions have been injured in the same case and which can be explained in nine out of ten cases by the fact that the sensory and motor areas are co-terminous. One area encircles the other; they may dentate into each other, because their frontiers are not like the lines of our diagrams. Dr. Mills said that in spite of ridicule, and in spite of the arguments which have been presented one year after another, he had gotten his brethren a little farther on the way.

ON CERTAIN STUDIES WITH THE ERGOGRAF.*

BY AUGUST HOCH,

FROM THE LABORATORY OF THE M'LEAN HOSPITAL.

The original idea which led to the investigation I wish to report was to study experimentally certain conditions of diminished mental and psychomotor activity. The conditions I had in mind were the depressed state of manic depressive insanity, the apathy of dementia præcox, certain states of general paralysis, also neurasthenia and the like. It is well known how much similarity such states may present when they are but slightly developed, and it was thought possible on the one hand to discover fundamental differences between these states, and on the other hand to obtain an insight into their nature.

Such studies are of course quite laborious, and in spite of the many experiments which were made I can present to you only an unfinished piece of work. Nevertheless, there are a number of important points which we can see even now, and the value of the method seems demonstrated. Moreover, in a field of work like ours where we have no cut and dried problems, but where much work is necessary for the formulation of such, the fact that this study yields certain definite problems seems to me also to justify its report.

In order to study these changes of activity it was necessary to investigate voluntary acts, and I chose the ergograph for the purpose. The model which I used in these experiments is in a general way the same as that described in an earlier paper¹ with the exception that certain modifications were introduced in order to insure more constant conditions from day to day, and that a ratchet arrangement was added to eliminate any considerable muscular work which might be expended in holding the weight back while it falls.

*Read at the meeting of the American Neurological Association, June, 1901.

¹Hoch and Kraepelin. "Ueber die Wirkung der Theebestandtheile auf körperliche und geistige Arbeit." Psych. Arbeiten. I. Bd. p. 380.

It is of course not the mere strength of the individual which interests us and which, to a great extent, depends upon his muscular development. It was necessary to arrange the method so that features might be brought out in which the influence of the nervous system would be more evident and amenable to study.

The method employed was this: each person was made to write three successive curves with a rest interval of fifteen minutes between. In other words the person experimented upon had to rhythmically raise the weight to the utmost, until it could no longer be stirred (the rhythm being one second, indicated by a bell signal of the metronome); then fifteen minutes rest, etc. This was repeated either every day or every other day for a varied period of time.³ By comparing the values of the three curves (expressed in mm.) with each other, and the values of the curves from day to day, we obtained relative figures, each individual setting as it were his own standard of strength. These relative figures of different persons could then be compared. The comparison was made not only between total amount of work done; but also between the pull-number of the curves and the average pull-height (*i.e.*, the total amount of work done in one curve, expressed in mm., divided by the pull-number).

The features we had to deal with were fatigue and recovery from fatigue, warming up and practice. The results of the six series of experiments were such that any marked deviation from the normal in fatigue or recovery from fatigue could be excluded. In regard to warming up, I may state that former experiments reported in the above quoted paper by Prof. Kraepelin and me had shown that frequently the second curve showed a striking increase over the first, an increase which owing to its more transient character was thought to be different from the influence of practice and which was regarded as due to "warming up." In a recent series of experiments with varying intervals made upon three

³The number of experiments made on one individual varied from 30 to 80. To make more than 30 or 40 would have been unnecessary for the problem in hand, but was done owing to a study of periodicity which was carried along with this work, but which has no direct bearing upon the questions here discussed.

normal individuals, the intervals being from five minutes to an hour in length, the second curve was higher in each case after an interval of fifteen minutes than after any other interval. It would seem that then fatigue had sufficiently passed away to allow the influence of warming up, still well-marked, to come most to the surface. This was the reason why in the experiments here reported fifteen minutes were chosen for the rest interval between two curves. In two normal cases the influence of warming up was well seen, while the pathological cases showed some deviations, some of which we shall take up in the course of our discussion. We may add here that the most probable interpretation of warming up seems to be that certain resistances have first to be overcome before the mechanism works at its best.

The influence of practice shows itself normally in a steady rise from work-day to work-day, and when we analyze this rise and study separately the pull number and the average pull-height of the first curve of each day we find that it is the pull-number which rises, while the average pull-height remains the same. Of course the absolute pull-height also rises, but it rises *pari passu* with the pull-number. This fact seems of interest and seems to show a remarkably constant relation between the activity of the central and that of the peripheral mechanism. For we have reason to think, as Kraepelin has shown, that if we stimulate the muscle alone to greater activity this increased activity shows itself (in voluntary muscular work of course) chiefly in the pull-height. The remarkably stable relation which we find here, through a long series of experiments, would seem therefore to give us some insight into the nature of practice in voluntary muscular work.

We will now pass from the normal to the abnormal cases and I will chiefly speak of one case of manic depressive depression in which the practice curve as well as the "warming up" shows very striking deviations from the normal.

In order to do this a few clinical remarks are necessary. Kraepelin has shown us that certain forms of "melancholia" and certain forms of "mania" belong together and constitute

what he termed manic depressive insanity. It is a disease which, briefly, is characterized by two sets of symptoms, the most striking of which are psychomotor retardation, thinking disorder, and depression of feelings on the one hand; psychomotor excitability, flight of ideas and exhilaration on the other hand. These, if pure, constitute the depressed and manic forms respectively. Interesting combinations constitute the mixed forms. Now it was chiefly the mild phases of a depressive nature which interested me in this connection. It seemed possible with the ergograph to obtain a method by which psychomotor retardation might be demonstrated in cases in which it is clinically not appreciable. These mild phases are represented by cases which lead, as I have seen, to wrong diagnoses, when the element of marked emotional depression is absent. The cases are then called neurasthenia, hypochondriasis, etc. When the emotional depression is present they are simply called melancholia, and unless we have manic phases in the course of the disease their place is indeed difficult to determine. The most striking feature is a feeling of inadequacy. These patients claim that they cannot do things, cannot make up their mind to do them, and ordinary tasks assume great proportions. With this may or may not be associated a "melancholia," *i.e.*, a marked emotional depression with self-accusation, etc. Sometimes only an irritated nervousness, or what may be called a chafing under the conditions which the nervous system imposes upon them characterizes these patients. This was the state of the patient we studied. He showed no appreciable psychomotor retardation. He has had a number of attacks all similar to his present one, and has not had any definite manic attack.

If we study now the results obtained in this patient, and regard in the chart^a the lines representing the influence of practice and the lines representing the relation of the three curves to each other on individual days (averages of the first ten experiments are given) we find very striking differences from the normal cases. The rise in pull-number from work-day to work-day such as we have seen it in the two normal

^aThe charts were demonstrated when the paper was read.

cases,⁴ and such as we find it in the two cases of mild dementia præcox is here entirely absent; indeed, we even find a diminution in the pull-number. However, the average pull-height rises (and also the absolute pull-height), so that there is not an absence of a practice effect, simply an absence of one element, namely that of increasing pull-number. On the individual days we find again a striking difference from the normal, and again this is most marked in the pull-number. It consists in an unusual rise of pull-number from curve to curve. The combination of these two traits at once suggests that certain resistances exist which, as in the case of warming up, are overcome to some extent by the work. They differ from the resistances underlying the normal "warming up" by being much greater, by being still further overcome in the third curve, and by manifesting themselves preëminently in the pull-number. The further explanation would then be that though these resistances are temporarily overcome by the work, they are again encountered every morning so that any practice effect cannot show itself in the pull-number. The fact that practice in pull-number is absent, while practice in pull-height is present, might at first glance suggest that we have here an isolated practice of the muscle without a practice of the central mechanism; while we have suggested that practice of the normal individual shows itself in both mechanisms. As I have said, we have reason to think that in a general way the pull-height represents more the muscular, the pull-number more the central activity. I think such an interpretation would here be quite erroneous, as it seems unlikely that in voluntary muscular work an isolated muscle practice should occur. We have therefore still to look for a reason why these resistances show themselves preëminently in the pull-number. I think we can explain this by assuming that the resistances are chiefly encountered at the starting of the pulls, while the rest of the pull is easier. This would of course not affect the beginning (as it does not show itself in the extent of the effort) but the end of the curve, be-

⁴Other normal cases have shown the same; they are not included here because the whole arrangement of the experiments was different.

cause with the increasing fatigue the resistances can no longer be overcome, and a number of pulls are cut off, as it were. The fact, however, that the pull-number rises from curve to curve shows that these resistances, offered to the starting of the pulls, are gradually overcome. How far they are overcome we do not know. We must therefore assume that each individual effort, or each pull, overcomes some resistance, so that at the end of the first curve something is gained in this respect; and, when the fatigue at the end of fifteen minutes has passed away to a great extent the curve has the benefit not only of the overcoming of resistances while it is in progress, but also the overcoming of resistances by the first curve. In the third curve we have a still further accumulation. The fact however that this alteration chiefly shows itself in the starting of the pull makes a sufficient effort nevertheless possible, so that practice is not absent but shows itself in an increasing pull-height. We shall see that in a case of dementia præcox, where we are probably dealing with a different kind of diminished ability to make an effort, there is a total absence of practice effect. We would therefore regard this practice in pull-height as central and peripheral just as in the normal; but associated with it we find the existence of certain resistances which are especially marked at the starting of each impulse. Probably the very fact that the work can overcome these resistances to some extent accounts for the fact that they show themselves preëminently in the beginning of each impulse. It may be that in cases in which the alteration is more marked we shall find a total absence of practice in pull-height as well as pull-number.

It seems probable that this alteration is not one confined to psychomotor mechanism, but that we have here resistances which are offered to any effort: the thinking disorder which we find associated with the psychomotor disorder in these cases would point to this.

Further work will have to show whether this interpretation is correct. At any rate there exists a striking deviation from the normal. And we have found a method to demonstrate this alteration in cases where it is not recognizable by means of ordinary clinical observation.

If we imagine this difficulty to increase we should *a priori* expect that the initiation of voluntary motion or of any voluntary activity would become more and more difficult, until finally it almost wholly cease: and this is just what we find clinically in cases of almost complete akinesia and mental standstill which belong to this class.

We have further, if continued study proves the correctness of these observations, an evidence of the essential relation of these mild cases with the pronounced states of retardation; and, we need not assume the addition of new symptoms in the pronounced states, but simply an intensification of what we see here. These mild cases are troublesome because the characteristic retardation of the more pronounced cases seems absent. Here, it seems probable, we have demonstrated its presence, and there is hope that by further study and comparison we shall be able to recognize it more clearly even by superficial symptoms without tests. This is of course of the utmost clinical importance, not only scientifically but practically so far as prognosis and treatment are concerned.

A word might be said about inhibition, a term which is often applied to psychomotor retardation. The fact that we find here resistances which are gradually overcome by the work itself, just as is the case in warming up, makes it seem more likely that the alteration is located in the mechanism concerned; rather than that it is the expression of the influence of one mechanism upon another, as would be implied by the conception of inhibition.

Finally, I may perhaps bring these findings into relation with a frequent observation in these mild cases, namely, that in the evening they feel better, and the still more striking fact that after a sleepless night they feel much better than after a good night. Perhaps this is due to the fact that resistances in both cases are overcome through the day and through the night.

Interesting is also the feeling of inadequacy of these patients which is perhaps accounted for by these resistances. This feeling of inadequacy seems in reality the more fundamental feature, which is always present in patients presenting

no manic traits, while the intensity of the melancholy features are perhaps more dependent upon personal peculiarities.

You can see what an interesting set of phenomena this case presented, and how they seem to fit into the clinical picture.

On the other hand it furnishes certain problems. It will be necessary to study in the same way different degrees of this disorder. This is of course possible only to a certain rather small limit of intensity. It will be interesting to study mild manic forms, and above all those peculiar combinations constituting the mixed phases. It will be interesting to study cases of general paralysis which present similar superficial symptoms, also neurasthenia, traumatic neurosis and the like. The comparison with dementia præcox I had already undertaken, and am able to make some statements, but owing to the time which I have already taken shall limit myself to a few words.

First, I would call your attention to a mild case, the interpretation of which was somewhat difficult. It was at first thought that the diagnosis of manic depressive insanity could be made, but further study showed him clearly to belong in the class of dementia præcox. Now this case seemed on ordinary clinical observation to show a real psychomotor retardation, yet in him the practice curve was like that of the normal in many respects, while the warming up, though showing certain similarities, was different from that of the manic depressive. In some respects another mild case of dementia præcox resembled this, though I cannot go into that here. He also showed a normal practice curve. We see then that here, though there were superficial similarities, the experiment showed us results which were fundamentally different. Finally, in a very pronounced case we found absence of any practice and only very slight evidence of warming up. While we might expect that a pronounced case of manic depressive depression would show similar results, clinical reasons nevertheless decide us to regard this state as one of apathy. It is probable that the results here are due not to the existence of resistances, but to a different kind of diminished ability to make an effort.

It might be said that the one case of manic depressive insanity upon which I have laid most stress is not enough upon which to base conclusions. But it seems to me that the agreement of the findings with our clinical knowledge of the disease, and the fundamental differences which we found in other superficially similar cases, give weight to the results even in this one case, and show the value of the method.

I have had to limit myself in my discussion to the most important points, and reserve a more thorough presentation to an exhaustive paper on the subject, upon which further work is now in progress.

Various other questions which this study revealed I cannot touch upon, such as personal differences in the normal or the study of daily disposition in the normal. I have already taken enough of your time. At any rate, you can see that it is possible by means of the ergograph to study certain conditions in the insane and that these studies are promising.

DISCUSSION.

Dr. McBride asked Dr. Hoch whether in the case of the descending curve that expresses the results in a single case or a few cases or a law applied to a type. Also in regard to his remark in reference to the possible dissociation of muscular movement from central stimulation. Dr. McBride said it has been shown by physiology that after muscular movement the exhaustion is largely in the nerve centers.

Dr. Hoch replied that he had stated in his paper the study of manic depressive insanity represents thus far only one case as the other tracings which he had shown also represent one case each. In regard to the central fatigue which Dr. McBride seemed to regard as the only element which finally terminates the work, Dr. Hoch differed; both central and peripheral fatigue are probably to be considered.

Dr. McBride said he meant chiefly central fatigue and partial muscular fatigue.

Dr. Hoch remarked that the question was of course a difficult one and he could hardly go into its discussion here. It has been fully discussed in the paper which Kraepelin and he published some years ago "On the effect of the constituents of tea on mental and bodily work." He added that the alterations which he had demonstrated in his paper were of course unquestionably central in nature.

THE STADIA OF MENTAL DISEASE.*

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Diseases in general have well marked stages. Every practitioner knows the incubative, eruptive, desquamative and convalescent phases of the exanthemata, and with increased experience comes to recognize the stages of most maladies by the symptoms alone.

Almost all nervous affections plainly have incubatory, acute and convalescent stages. It is true that mental diseases are often greatly prolonged, that they have multiform symptoms, and that it is not always easy to clearly demarcate the stages of which they are composed. It is possible though by the careful study and comparison of very large numbers of cases to deduce the rule of the stadia, which form attacks of insanity, and to discover general uniformity in the order in which they occur.

In the curable psychoses there is a very constant clinical progression. There is first an average period of some months of gradual disorder of physical functions with mental distress; secondly comes the period of active mental disturbances for several months; thirdly follows for a few weeks reactive exhaustion; and fourthly a convalescent period of a number of months. In a word, there are four stadia, one of incubation, one of acute symptoms, one of debility from nervous forces spent at the height of the attack, and one of convalescence.

The incubatory stadium is essentially one of morbid systemic changes with disturbed sleep and disturbed digestion and loss of weight. Above all an altered cœnesthesis is a constant symptom. Cœnesthesis is the state of feeling resulting from the sum total of organic sensations and sympathies, and as the latter are morbid there results cœnesthetic depression.

*Prepared for the meeting of the American Neurological Association, held in Boston, June, 1901.

as the prevailing psychopathic state. Less frequently there is pleasurable organic consciousness and *cœnesthetic* exaltation. This incubatory stadium is based in fact on the pathological systemic changes and the resulting altered *cœnesthesis*, and hence is correctly named *stadium cœnæstheticum*.

Then comes the *stadium acutum*, which in seventy-five per cent. of the cases is the melancholic or the maniacal state. These two psychopathic states have general physiological analogues in the expansion or depression of feeling common to all mentality. The maniacal state is the wider departure from the normal and presents loss of control of actions, rapid change of ideas and emotions, great muscular activity, insomnia, loss of weight and illusive disorder of the special senses, and it may constitute the entire *stadium acutum*.

The melancholic state is characterized by great emotional depression, slow and painful ideation, doubts and fears, disordered vital functions, and general malaise, and it may continue throughout the *stadium acutum*.

It is of prime importance to recognize that the melancholic and maniacal states here described are mere symptom-complexes which appear and disappear, supplant or follow each other during the *stadium acutum*, and that they are by no means to be mistaken for separate attacks of mania and melancholia as has so often been done. This fact was first clearly set forth by the writer in his "Text Book on Mental Diseases," and it removes the absurdity of independent insanities in rapid succession.

There is one other psychopathic state which in some cases is a chief component of the *stadium acutum*, and it is best termed the stuporous state. The symptoms are slowed respiration and circulation, subnormal temperature, muscular inaction or fixed attitudes, and psychic and sensorial abeyance. This state may alternate with the melancholic or maniacal in the *stadium acutum*, or it may form the entire stadium as in acute primary dementia and melancholia *attonita*.

When the full force of the *stadium acutum* has spent itself there remains a state of physical and mental debility for an average of some weeks, and this is the *stadium debilitatis*. Its

clinical features are weak memory and volition, apathy or emotional weakness, and general feebleness of bodily functions. If the acute stadium be very severe the exhaustion may reach the grade of sequential stupor, and this stadium may then become a stadium stuporosum.

Fourthly comes the stadium *convalescens* having an average duration of some months before complete recovery. Its progress is ordinarily attended by hours of former emotional or delusional perturbation, but these fluctuations in the rising tide of health disappear, and a perfect physical restitution is accomplished about the time of restoration of full conscious personality. In the non-recoverable cases this final stadium becomes a stadium *dementiæ*.

The sequence here given of stadium *cœnæstheticum*, stadium *acutum*, stadium *debilitatis* and stadium *convalescens* is what may be termed the natural history order of the disease, and it will be found verified in the vast majority of all curable cases, and the apparent exceptions will be noted directly.

The total duration of these stadia as judged by statistical information is longer than is ordinarily supposed. In nine thousand seven hundred and thirty-two cases of insanity treated to complete recovery in State hospitals, the average period of the malady was 7.7 months before admission, and 9.5 months while under treatment, making a total average duration of 17.2 months from the incubatory stadium to the end of the convalescent stadium. As the *cœnæsthetic*, acute, and convalescent stadia are of about the same length, and the stadium *debilitatis* about one-fourth that of the others, it would seem that in this series of cases the average duration would be a little more than five months for the former named stadia, and one month for the latter. In very exceptional cases the stadia are to be measured by hours or days rather than by weeks or months, and in the other extreme they may begin in infancy and end only in old age. The ordinary stadial course of the psychoses has now been given, and there remains the consideration of the stadia in the strongly hereditary insanities. A broad view must here be taken of the

whole evolution of the mental alienation. A degenerate child for instance begins early to show morbid instability, is wilful and perverse, by turns unaccountably gloomy or gay, differs more and more from healthy children with advance of years, and at puberty is recognised to have mild degrees of the maniacal, melancholic or stuporous states. After the pubescent crisis the patient has an apparent return of mental health and undertakes the regular duties of life, but breaks down under every severe stress of mind or body. The periods of health become shorter and the melancholic and maniacal attacks longer, until some form of periodic insanity is established for a lifetime.

It must be admitted with scientific breath of view in such cases that the stadial progression of the mental disease is from the cradle to the grave. The incubatory stadium progresses on predestined hereditary lines throughout childhood; the stadium acutum begins with the first decided mental disorder at the pubescent crisis, and covers the whole course of life. The apparent recoveries between the attacks are not real, but are only intermissions in the progressive malady which, if life is sufficiently prolonged, ends in a stadium dementiæ of the active kind peculiar to degenerates.

A like stadial progression of mental disease is often to be found in the established neuroses of epilepsy, hysteria, and hypochondriasis, and in some cases of primary monomania there is also a gradual evolution and a life-long duration of the insanity.

It is necessary here to speak of exacerbations, remissions, intermissions and lucid intervals in relation to the stadia. Exacerbations occur only during the stadia, and are intensifications of existing symptoms, and in women often coincide with the catamenia. Remissions are diminutions, but not positive cessations of the mental disorder; they happen during the stadia, and often mark the ebb and flow of nervous energies in the convalescent stadium. With brief or long rythm they also seem to interrupt the stadium acutum in specially neurotic cases, but in reality they are only clinical phases of the advancing disease, and they should never be mistaken for lu-

cid intervals. A lucid interval is a temporary restoration of right mind, but not a removal of the underlying pathological conditions of the mental disease. The lucid interval may occur during or between the stadia and last a day, a week or a month and even longer.

An intermission is the complete disappearance of the physical and mental symptoms of the disease. It occurs between the cycles of periodic insanity and has a duration of weeks or months.

The writer long ago pointed out the fact that the maniacal, melancholic and stuporous states might combine with remissions and intermissions in any imaginable order to form the cycles in the periodic forms of mental disease.

If the maniacal or melancholic state be followed by an intermission and this sequence continues, the case is intermittent mania or melancholia. If the maniacal or melancholic state and then a remission be the sequence repeated the form is remittent mania or melancholia. In another instance the melancholic state is immediately followed by the maniacal state, and this cycle continuously appearing is called circular insanity, and if there be an intermission between the cycles it is intermittent circular insanity.

The essential point is that all these complicated phases of periodical insanity including the cycles and intermissions simply constitute a stadium acutum, which is progressive and may continue for years or even endure for the greater part of a lifetime. It will always be found that this stadium acutum is preceded by a prolonged stadium coenæstheticum, and that it will eventually graduate into a stadium of mental deterioration which is the equivalent of the stadium dementiæ in the simple psychoses.

In the complicated alternating insanities therefore the simple order of the stadia is unchanged. The unusual prolongation of the stadium acutum may occur also in other forms. Thus in general paretics it may last for years with rhythmical fluctuations of the melancholic, maniacal or stuporous states, and with intermissions so long as to be mistaken for cures, but in course of time with a certainty like that of the law of gravity the stadium dementiæ takes its

place in regular order. Close scientific study of these long intermissions shows that they are not perfect physical and mental restitutions, nor even *intervalla lucida*; that slight psychic and somatic signs are to be detected, and that it would be more in accord with clinical truth to regard such intermissions as *stadia minora* intercalated between the regular *stadia majora* above delineated.

The main conclusions of this paper may be briefly summarized as follows:

The vast majority of attacks of mental disease have but four simple *stadia*. The main *stadium acutum* is constituted chiefly of the maniacal, melancholic, or stuporous states, which are mere symptom-complexes alternating or replacing one another, though sometimes mistaken for separate attacks of insanity.

Mental disease must be regarded as one continuous pathological process with periodic fluctuations, so constant that remissions and intermissions are to be viewed as part of the morbid phenomena.

The diversified curricula of insanity and the artificial variety of its forms described by modern writers, may in great measure be reduced to clinical simplicity by the law of the *stadia*, conjoined with the maniacal, melancholic and stuporous states, as here rightfully assigned to the position of symptomatic syndromes, rather than independent forms of alienation.

In fine and in fact the law of *stadium* and rhythm and of the dominant states of expansion, depression and stupor are the only stable data capable of any wide purpose for the logical unification of the multiform manifestations of mental disease.

Periscope.

CLINICAL NEUROLOGY.

ZUR CASUISTIK DER INFANTILEN PROGRESSIVEN SPINALEN MUSKEL-ATROPHIE VON FAMILIALEM RESP. HEREDITÄREM CHARACTER (Infantile Progressive Spinal Muscular Atrophy of Family (or hereditary) Character). L. Bruns (*Deutsche Zeitschrift für Nervenheilkunde*, 1901, xix, 5 and 6, p. 401).

The number of cases of this disease which have been reported is very small, hence Bruns gives the clinical histories of three cases which he had under observation for some time. His cases show all the important clinical characteristics first described by Werdnig and Hoffman. Beginning in early childhood very slowly, the child may learn to walk, but soon gives it up and takes to bed. Power is gradually lost in the legs, then in the trunk, and standing soon becomes impossible. There is paresis and atrophy beginning at about the same time in the muscles of the pelvic girdle and of the trunk. This is entirely symmetrical and affects especially the iliopsoas and quadriceps femoris. Later the arms and head muscles are affected. In the limbs the proximal muscles are affected first, and the disease proceeds slowly toward the distal parts (hands and feet). These last never escape if the disease lasts long enough, but there is often more movement in them than would appear possible with the degree of atrophy which is present. The supporting of the head and that of the trunk becomes especially difficult. The patient can long balance head and trunk, but cannot lie down or get up slowly. On account of the weakness of the muscles there is spinal curvature and talipes equinus. The atrophy of muscles may be partially concealed by fatty deposit. The paralyzed muscles may show diminished electrical reactions and even reaction of degeneration. Fibrillary contractions may or may not be present. Occasionally the bulbar muscles are affected. No hypertrophy or pseudo-hypertrophy. The paralysis is flaccid with lost tendon reflexes and occasional secondary contractures. There is no sensory disturbance, sphincter involvement, or mental impairment. The course is rather rapid and death is due to paralysis of respiratory muscles. The disease is hence progressive, the muscular atrophy is centrifugal and symmetrical. The only considerable difference shown in the cases of Bruns were their beginning somewhat later than those of Werdnig and Hoffmann (at about two and three years), and lasting longer. One case died in her fifteenth and the other two were alive aged respectively five and twelve years, at the time his paper was written. The author publishes some instructive photographs. ALLEN.

SUL DISTURBI DELLA RESPIRAZIONE NEGLI EMIPLEGICI (Disturbances of Respiration in Hemiplegics). Boeri and Simonelli (*Gazz. degli Osped.*, Oct. 7, Vol. 20, 1900, p. 1,249).

These authors have studied the respiratory movements in 61 cases of hemiplegia. In almost every case respiration was both absolutely and relatively diminished; in 49 of the cases there was a dis-

tinct difference in movement between the two sides; in 39 the movement was less on the paralyzed side, and in 10 it was more marked and full when compared with the sound side. These differences applied not only to exaggerated voluntary efforts, but to quiet automatic respiratory movements. The nature of the cerebral lesion made no difference. The difference was as a rule more marked in proportion to the degree of paralysis, especially when the greatest stress was seen in the upper limbs. In some cases a unilateral arrhythmia was observed. The authors believe there is a superior cortical center for respiration, probably situated somewhere near the motor center for the upper limb, to which the medulla center is subservient. The greater frequency of respiration on the paralyzed side is explained by supposing that this center is excited by irritation rather than depressed. Automatic respiration could be carried on by the medulla center, but when voluntary the cortical center would be called into play.

JELLIFFE.

UEBER EINEN GEHEILTEN FALL VON OTOGENER MENINGITIS (Concerning a Cured Case of Otogenous Meningitis). Bertelsmann (Deutsche med. Wochenschrift, No. 18, 1901, p. 277).

A patient with a purulent process in the ear, had severe headache in the right frontal and temporal regions, rigidity of the neck, scaphoid abdomen, hyperesthesia of the skin, high fever, etc. The diagnosis of extradural abscess or circumscribed leptomeningitis was made. At the operation pus was found on the outer surface of the cerebral dura and the dura was not opened. Lumbar puncture was performed during the narcosis, and extracellular diplococci were found in the fluid obtained. The case was regarded as hopeless, but complete recovery ensued.

SPILLER.

UEBER GONORRHOISCHE NERVENERKRANKUNGEN (Gonorrheal Nervous Diseases). A. Eulenberg (Deutsche med. Woch., Vol. 26, Oct. 25, 1900, p. 686).

A. Eulenberg calls attention to the fact that while nearly every other part of the body has its distinct series of maladies to which a gonorrheal etiology is attached, the nervous system appears to have been somewhat neglected in this regard. This omission he then proceeds to rectify by describing fourteen cases of nervous disease apparently directly traceable to a specific urethral infection. In considering the secondary nerve lesions due to the gonococcus three classes are to be made: (1) Neuralgic affection, especially gonorrheal sciatica. (2) Various forms of muscular atrophy or dystrophy, and atrophic palsies. (3) Gonorrheal neuritis in its more restricted sense, as mononeuritis or polyneuritis, and gonorrheal myelitis. In order to establish a connection between the infection and the disease a single coincidence of symptoms is not sufficient, but a general consideration of the points involved in each particular case is necessary. Important factors are the simultaneous occurrence of urethritis with or without the presence of gonococci in the secretion, the existence of other metastatic specific lesions, epididymitis, endometritis, endocarditis, or arthritis; or symptomatic peculiarities of the nerve affection itself.

JELLIFFE.

UEBER DAS VERHALTEN DER PATELLARREFLEX BEI HOHEN QUERSCHNITZMYELITIDEN (The Patellar Reflex in High Transverse Myelitis). R. Bálint (Deutsche Zeitschrift für Nervenheilkunde, 1901, xix, 5 and 6, s. 414).

That there is loss of the knee-jerk in complete transverse lesions of the cord at points above the lumbar enlargement was first asserted by Bastian. This has found both supporters and opponents. The number of cases which has been thoroughly examined both clinically and anatomically, is surprisingly small, however. Bálint adds the following: A case of myelitis of the eighth dorsal segment came under observation on the fourth day. There was then total paraplegia, great diminution of tactile sense, while temperature and pain sense were retained, and there was loss of reflex in the lower extremities. After eighteen days the reflexes returned, were exaggerated, lasted fourteen days, and then again disappeared. Death at the end of three months. The anatomical examination showed softening of the cord with complete degeneration of all nerve fibers of the cross section for some distance above and below the affected segment. Ascending degeneration was much more marked than descending degeneration, which appeared to be in only an early stage. In the lumbar region outside of the descending degeneration there was nothing abnormal in either white or gray matter, the cells appearing normal upon examination by Nissl's method. There were, however, alterations in the nerve roots and pia, the latter being a little thickened, the veins distended and their walls showing nuclear proliferation. Where the nerve roots passed through the pia they appeared to be compressed and somewhat damaged. These changes affected the posterior roots more than the anterior roots. In muscles and nerves there was found nothing of moment. The author next proceeds to study somewhat in detail the other cases of total transverse lesion which have been reported. He finds that (1) there are cases which prove that total interruption of the spinal conduction paths does not cause loss of reflexes. (2) There are cases, and plenty of them, which show that in the high lesions of the cord, complete or not, flaccid paralysis of the lower extremities with loss of reflexes is very frequent. Of these are (a) cases in which the observers have attributed loss of reflexes to lesion of the reflex arc. (b) Cases in which the observers have declared the reflex arc free. These latter he finds not free from objection. From this it follows that in man and animals interruption of the spinal conducting paths are not necessarily followed by flaccid paralysis and loss of reflexes. However it is frequent, we may say in the majority of cases, that complications occur which cause suppression of the reflexes. Study of the physiology of the subject leads him to believe that the separation of the cells of the anterior horns from influences arising in the cortex causes loss of tonus in them and in the muscles and unfavorably influences the reflex function. Under these circumstances a secondary affection of the reflex arc, even of slight intensity, suffices to cause loss of reflexes.

ALLEN.

SIND IRGENDWEISE GENETISCHE BEZIEHUNGEN ZWISCHEN DEN ALLGEMEINEN NEUROSEN UND DER APPENDICITIS DENKBAR? (Do Any Genetic Relationships Exist between Appendicitis and General Neuroses?). O. Schaumann (Deutsche med. Woch., Vol. 26, Nov. 1, 1901, p. 711).

Ossian Schauman answers this question in the affirmative, and as evidence cites the occurrence of appendicular inflammations in several members of each of fourteen different families, in twelve of which there was a hereditary neurotic taint. Furthermore, in investigating seventy-five cases in which the disease had befallen but a single member of the household, it was found that in the majority of instances either the patient or a near relative gave evidence of nervous degeneracy. In order to establish a connecting link between

the neurotic condition and the intestinal lesion the author adverts to the well-known fact that neurasthenia and various forms of enteroptosis are frequently found in the same individual, and suggests that the abnormalities of position may either provide more favorable conditions for the development of the bacterial virus which represents the immediate cause of the disease or may lessen the resisting power of the appendix.

JELLIFFE.

UEBER ZWEI SELTENE FORMEN VON GESICHTSKRAMPF (Two Rare Forms of Facial Spasm). W. v. Bechterew (*Centralblatt für Nervenheilkunde und Psychiatrie*, Aug., 1901, p. 490).

Von Bechterew describes forms of facial spasm in which the movements resemble those of laughing or snuffing. The laughing spasms in his two patients were bilateral, and occurred often at most inopportune moments. The snuffing tic resembled the movements of the face made when snuff is taken.

SPILLER.

THE PROGNOSIS OF TRAUMATIC HYSTERIA. Pearce Bailey (*Med. Rec.*, Aug. 24, 1901).

By far the larger number of cases are made the bases of personal injury claims, writes the author, and it is easily understood why a hysteric is often misjudged. The disease finds expression in physical symptoms, such as paralysis, defects in sight, smell, hearing, etc. The normal sensory stimuli fail to be transferred to association systems, and the patient feels, sees, tastes, smells, etc., without being aware of it, and with a firm belief in his own incapacity. Since such belief is false, hysteria deserves to be classed among the delusional insanities. It must not be forgotten that a fixed idea may disorganize the life of an individual as much as a surgical injury, and that it may take root so deep that it can never be gotten rid of. In traumatic hysteria, bad heredity makes the prognosis unfavorable, for the instability of nervous function is the natural birthright of children of the insane, epileptic, alcoholic or other degenerate. In the author's experience, however, many of the victims of traumatic hysteria have as good family records as most people. The older the patient, the more likely are the symptoms to become permanent, especially in the presence of chronic diseases, alcoholism and arteriosclerosis being the worst. In the healthy and well nourished there is more hope. Monoplegias usually recover rapidly, hemiplegias less rapidly, and paraplegias are most rebellious. Twitchings, hiccough, and choreiform movements are of little significance. Shifting, inconstant anesthesia is of more favorable omen than that which is profound and constant. Blindness and deafness may be serious, but affections of taste have accompanied the mildest only of the author's cases. If, after an accident, a patient could be isolated and cared for properly, probably we would hear very little of persistent traumatic hysteria. Likewise it is practically impossible for a patient to recover from this disease while money is at stake, so the longer the litigation is postponed the more permanent are the symptoms likely to be. Nevertheless the money is not the cause of the symptoms, and immediate recovery on receipt of damages is not to be expected. Indirect suggestion, by convincing the patient that he can do things which he thought impossible, is the most efficient treatment.

BASTEDO.

LA PARAPLÉGIE SPASMODIQUE FAMILIALE ET LA SCLÉROSE EN PLAQUES FAMILIALE (Hereditary Spasmodic Paraplegia and Hereditary Disseminated Sclerosis). MM. R. Cestan and G. Guillain (Revue de Méd., Vol. xx, Oct., 1900, p. 814).

Amongst nervous diseases there is a group termed hereditary diplegia by some, and hereditary spasmodic paraplegia or disseminated sclerosis by others. Under these designations different maladies are confused, as in the two following instances, which are strikingly different: (1) A boy, aged fifteen years, came under observation in May, 1900. His father and sister showed precisely similar symptoms. He had been quite healthy, but at eight he had difficulty in walking. He walked on the points of his toes, and had a constant feeling of weight on his legs. He remained in this condition until twelve. Movements of the arm were then executed slowly and with difficulty, and the head inclined towards the right side. In May, 1900, the boy's gait was obviously spasmodic, but there were no signs of cerebellar trouble. The patellar and Achilles reflexes were exaggerated and there was distinct spinal trepidation. Babinski's sign was present. Intelligence and speech were unimpaired. The author regarded the case as one of organic spasmodic paraplegia with spasmodic torticollis, the lesion being situated in the pyramidal tracts. From a practical standpoint the condition requires to be distinguished from Little's disease. In the latter, however, there is usually a history of premature birth, obstetric traumatism, or infantile meningitis. The spasmodic phenomena, moreover, begin early, and remain stationary, or ameliorate slightly, and there may be strabismus, cranial asymmetry, defective intelligence, convulsions, or arrested development.

(2) This group differs from the preceding in the addition of other symptoms. The parents were healthy, and had ten children, of whom one died in infancy of meningitis, two are epileptics, and two others have special symptoms as described below. A boy, aged sixteen, came under observation in November, 1899. He had been healthy up to the age of three, and easily learned to walk. Subsequently he walked badly, and frequently fell, but there was no pain or sense of fatigue. Between two and seven he had frequent attacks of laryngismus stridulus. He had always been mentally dull, but as he grew up, walking, though not quite normal, was accomplished without difficulty or fatigue. In April, 1899, he began to articulate badly and his sentences were sometimes unintelligible. In January, 1900, there was sudden blindness of the left eye, followed by equally sudden recovery. When examined in February, 1900, he walked slowly with short steps with deviation from the right. If asked to turn around suddenly as he walked, he had a sense of losing his equilibrium, and as he moved there was frequent vertigo. The patellar and Achilles reflexes were exaggerated, and the foot with the toes *en grappe* resembled the condition found in Friedreich's disease. Speech was slow and scanned, as in disseminated sclerosis. There was marked nystagmus. Writing was accomplished without difficulty.

The sister of this patient only developed difficulty in walking at twenty. At twenty-two there were voice troubles. In February, 1900, she was thirty-two. Walking was difficult and spasmodic, not "cerebello-spasmodic," as in her brother's case. There was great rigidity of muscles, and the feet showed the characters of Friedreich's disease. The patellar and Achilles reflexes were exaggerated. Ba-

binski's sign was elicited, and there was marked nystagmus, with slow, scanned speech.

The writer regards both these cases as a family form of disseminated sclerosis. Exaggeration of reflexes, spasmodic gait, the speech and the absence of scoliosis and choreiform movements, excluded Friedreich's disease. The first family was affected by pure hereditary spasmodic paraplegia; the affection in the second was of a different type and belonged to a hereditary type of disseminated sclerosis.

BONAR.

THERAPY.

REMARKS ON FACIAL PARALYSIS, WITH SPECIAL REFERENCE TO TREATMENT. A. Short (Birmingham Medical Review, April, 1900).

The author in his paper says he intends only to deal with the form of neuritis which occurs either in the Fallopian canal or below it, unaccompanied by any disease of the bone. He has collected forty-one cases of this form of facial paralysis, and has full records of twenty-five. Formerly it was thought that this form of paralysis was due to swelling of an inflammatory nature in the sheath of the nerve, and was ascribed to cold and referred to generally as rheumatic neuritis. Later researches, however, show that in some cases the lesion is a real parenchymatous inflammation of the nerve-structure itself, and not due to pressure alone, the inflammation extending along the nerve outside the skull and even invading the divisions on the face, as well as being present inside the bony canal. Alcohol, lead, and syphilis have all been ascribed as causes of the affection, but the last of these is the only one which seems to be probable.

The treatment is local, general, and electrical. As regards local treatment, counter-irritation behind the ear by means of a blister is of great service in an early condition of the affection, as it often relieves the pain. Should blisters from any cause be inadvisable, a stimulating liniment may be used to rub in over the mastoid process. With respect to the general treatment, iodide of potassium in five-grain doses three times daily is usually given, as in the treatment of other forms of neuritis; but in a considerable number of cases treated without it the author did not think they were any worse for the lack of it. At the end of the first fortnight strychnia should be given, and continued until the muscular contraction is almost as good as on the sound side, and then stopped. By far the most valuable treatment, however, is the electrical treatment by stimulating the muscular fibers with galvanism; in this way their nutrition is kept up until voluntary action returns. The author is of opinion that, as a rule, galvanism is not applied early enough. No doubt a few mild cases will recover without the use of galvanism, but recovery in such cases rarely takes place before three or four weeks have elapsed, and if the case happens to be a severe one the best time for applying the treatment has passed if we wait until the end of this period. Prognosis based upon the presence or absence of the reaction of degeneration is not always to be depended upon, for in one of Dr. Short's cases it was well marked on the fifth day, and the man was quite well in a month's time. The author does not think that the third day of the paralysis is any too soon for the application of galvanism, and the weakest current that will cause contraction of the muscles should be used. Faradism is not absolutely necessary, and when the nerves on account of their irritable condition, respond less readily to it than to galvanism, it should be avoided. Later on, when reaction to faradism is normal, and the voluntary action of the muscles is weak, a

combination of the two currents will be useful, and will hasten recovery. In some cases in which electrical treatment has not been applied, or if so, it has been carried out in an unsystematic manner, so that at the end of four weeks the condition has become chronic and ultimate recovery doubtful, the author has seen good results from galvanic treatment for four weeks, quite upsetting a prognosis given without a trial of the continuous current. In the chronic form of case, especially when a little voluntary power has returned, the author has seen "considerable benefit accrue from the use of a small silver hook placed in the corner of the mouth, and attached by means of an elastic loop to the ear of the same side. Every movement of the muscles of the lips and cheek alters the tension of the elastic pull of the hook."

It is the paralysis of the orbicularis of the mouth and the buccinator which constitutes the most unpleasant feature of the affection, as it impedes speech, interferes with eating, and allows the saliva to run out of the corner of the mouth. The pull of the elastic is in direct antagonism to the action of the orbicularis, so that by using this apparatus, which has been called a "face crutch," the muscular work performed by that muscle and in certain positions by the buccinator is increased. In using the hook the tension of the elastic must be arranged so that the pull on the corner of the mouth is sufficient to widen the aperture about one-quarter inch. At first the apparatus should be worn for about ten minutes, and never for more than an hour at a time. If a feeling of cramp in the cheek occurs, the hook should be taken out at once and the face rested. This artificial method of exercising the muscles should also be combined with ordinary massage.

BONAR.

THE PALLIATIVE TREATMENT OF PARALYSIS AGITANS (E. Williamson (Practitioner, April, 1900).

The author remarks quite truly that although there are no known means of curing the disease or checking its progress, yet by paying attention to some points in the general treatment, and by the use of a drug which he recommends, the distressing symptoms may be alleviated, and the patient's condition be made more comfortable.

As regards the general treatment, it will be found that mental excitement, the visits of many friends, and mental worry and anxiety increase the tremor and restlessness, and hence it is important that the patient should lead a quiet life, and be spared from mental excitement and worry as much as possible. As the tremor often diminishes markedly when reading an interesting book, or, in the case of female patients, when sewing or engaged in needlework, it is well to advise the patient to occupy his time in some similar way. The tremor may be checked for a minute or two by a mental effort, or by grasping some adjacent object, such as a chair. Some patients find that they can check it for a time by placing the hands on the sides, and in some cases the tremor can be arrested if a friend seizes the arms and holds them vertically above the head. A warm bath will also often cause a diminution of the tremor for several hours. Wine, alcoholic drinks, and strong tea and coffee cause the tremor to increase, and therefore if alcohol in any form is taken, it should be only in very small quantities and the tea and coffee must be very weak. It is important that the patient's room should be well ventilated, and not too warm, as a warm, stuffy room makes the restlessness worse. In the open air the patient usually feels better, and one of the best

means of relieving uncomfortable sensations and restlessness of the muscles is life in the open air. During a railway journey or a drive in a carriage the trembling is diminished, and the same occurs when the patient is wheeled about in a bath-chair. When the disease is advanced, the patient has very great difficulty in walking without assistance. He is very likely to fall, and if he falls he cannot get up again, so that he should never be allowed to go about alone when the walking becomes difficult.

With respect to the treatment by drugs, the author has tried carefully numerous drugs which have been recommended by authors, but usually without obtaining the slightest benefit. He does not like hypodermic injections, as he thinks it undesirable to give drugs hypodermically day by day in a disease of such long duration if benefit can be obtained by other methods of administration. The only drug that he has found of real service is hydrobromate of hyoscine, which he at first gave in the form of a pill, containing from 1-200 to 1-150 of a grain, but without result. At a later date he gave larger doses in solution in chloroform water, and found it of distinct service. The author says the practitioner should be cautious and not begin with more than 1-150 or 1-100 of a grain given by the mouth, but he also goes on to say that he has found small doses of the drug to be of no use, but that when increased to 1-75 of a grain in chloroform water good results have followed. Merck's hyoscine hydrobromate, obtained directly from Darmstadt, is particularly recommended. Hyoscine, the author says, not only diminishes the severity of the tremor, but renders the patient more comfortable. He has given it to one of his patients in 1-75 grain doses three times daily, with short intermissions, for three years. If the patient suffers from sleeplessness, a little whiskey and water may be given at bedtime, or sulphonal may be employed. Hyoscine, however, is also useful; a dose containing 1-75 of a grain in chloroform water should be put at the bedside of the patient, to be taken soon after going to bed, if sleep does not occur, or if the patient wakes very early in the morning and cannot get to sleep again.

JELLIFFE.

Book Reviews

NERVENLEIDEN UND ERZIEHUNG. By Prof. H. Oppenheim. S. Karger, Berlin, 1901, pp. 56.

This pamphlet of fifty pages is an address delivered before the Berlin Psychological Society. It is devoutly to be hoped that other neurologists will follow Oppenheim's example; accept invitations from associations of educated laymen, take this brochure as a basis for their remarks, and thus spread the gospel of proper hygiene for the nervous system where it will do the most good. After all, it is the parents and teachers, much more than the doctors, who have the opportunity to make or mar the neurotic child. But even in the profession there is cause for propaganda, and Oppenheim's address is warmly commended to general practitioners and to specialists.

In opening he states with positiveness almost amounting to assumption that the most important factor in the physical and mental health of an individual is his congenital tendency, and that this depends in the highest degree on the quality of the progenitors. To this he adds the very pertinent observation that the dividing line between the influences of heredity and environment is generally bridged by the circumstances that the very qualities of the progenitor which made the offspring degenerate, continue in operation during the rearing of the child. In other words, the parent who vitiates the fetus in conception still further damages the child in the rearing.

The subject naturally falls into several fundamental questions of which the most important are: To what extent may rearing counteract a congenital tendency to nervousness? What kind of bringing up aggravates such tendency? May the manner of rearing, in the absence of such tendency, of itself produce nervousness? These questions are not taken up *seriatim* but are answered in a general way in the succeeding text, as well as further questions as to what are and are not the important elements in training to prevent and cure nervousness.

The author first considers the toughening and hardening of the body, not only for physical and mental stress but for changes of temperature and other weather effects. Nervous persons are notoriously susceptible to all sorts of influences which in the nature of things assault the individual from birth to death. Especially is the child to be accustomed to pain and to endure it without yielding. No less than pain must various discomforts and disagreeable sensations be endured, and the child is not only to endure them but is to be taught to endure with relative indifference if in his riper years he is to enjoy comfort and happiness. Abnormal reaction to foul odors, bad tastes, disturbing sounds and distressing sights is to be combatted by means proper for developing healthy inhibition.

Even more important than the foregoing is development of such powers and qualities as control the emotions. Nothing could be more the reverse of rational than the advice of some few neurologists (Levillain), that the nervous person be carefully shielded from everything that excites the emotions. A training along the lines of

Buddhism which would protect the growing spirit even from the sight of pain, and withdraw it entirely from the knowledge of suffering and sorrow, is not the one to prepare the individual for his battle of life and arm him against all the influences that threaten the nervous system.

Among the emotions fear, in its various forms, and anger, in its various degrees, are especially mentioned, also the potency of "judicious neglect" at critical moments. In relation to the foregoing points the author aptly calls attention to the fact that the planned training of the child is often nullified by carelessness of parents, nurses and others. Without design various emotions and obliquities are encouraged by incidental behaviour of older persons. Instruction is made negatory by imitation.

Next is attacked the much more difficult problem of how to properly train the higher faculties and more refined susceptibilities, and the author finds in symmetrical but not premature development of these a yeoman safeguard against nervousness. A consideration of religious and ethical training closes with the conclusion that "everything that goes to build character and make the will strong and true, conduces to nervous health."

Simplicity of life, few wants, few luxuries, pleasure in work, love of nature, all conduce to a healthy nervous system. Enjoyment of art, music, poetry, fiction and even more solid literature is not to be encouraged too early. Stimulation of the ambition, pride and vanity of nervous children in school work is roundly condemned and some of the calamities of such a course enumerated. The subject of sexual dangers and irregularities is touched with a master hand, but nothing new is presented, and the conclusions are such as would be reached by every neurologist of standing.

PATRICK.

ANLEITUNG BEIM STUDIUM DES BAUES DER NERVÖSEN CENTRALORGANE IM GESUNDEN UND KRANKEN ZUSTANDE. Von Dr. Heinrich Obersteiner, K.K.O.O., Professor, Vorstand des Neurologischen Institutes an der Universität zu Wien. Vierte, vermehrte und umbearbeitete Auflage. Franz Deuticke, Leipzig und Wien.

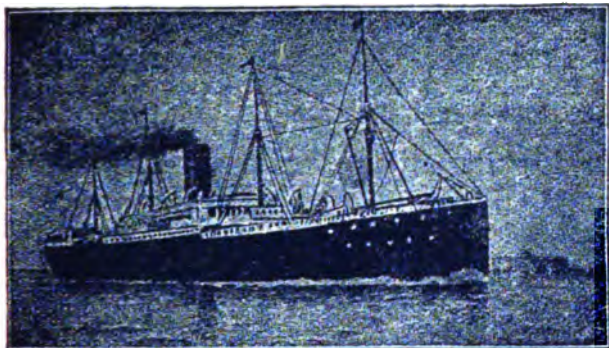
It is now fourteen years since the first edition of Obersteiner was put forth and it has claimed its position as a classic since its issue. Most of our readers are thoroughly aware of the practical character of this work and it would be a work of supererogation to point out its many points of excellence. In its new edition, however, it may be remarked that it has been almost entirely rewritten, a course rendered necessary by the many advances in the knowledge of the anatomy of the nervous system which have been made during the past five years.

It is not to be wondered at that all of the material gathered during this fruitful epoch should not have been included in this edition. To have endeavored to incorporate all the results of the nerve investigations would have resulted in the manufacture of a great neurological patch-work. Happily Obersteiner has avoided this and has given us a rewritten and thorough revision of his well-known work, thoroughly abreast of the modern period.

SMITH.

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TABLE OF CONTENTS ON PAGE ii and iv

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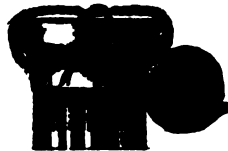
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Original Articles.

ON TUMORS INVOLVING THE CORPUS CALLOSUM.*

BY JAMES J. PUTNAM, M.D.,

AND

EDWARD R. WILLIAMS, M.D.,

OF BOSTON.

The interest attaching to the subject of tumors involving the corpus callosum is not to be wholly measured either by the therapeutic advantage which a correct diagnosis can give us, which is very slight, or by the purely scientific problems that are involved, but also by the fact that there is considerable likelihood of mistaking the effects of such growth for functional psychoses of various sorts, and still more for the symptoms of general paresis.

Strictly speaking, neither of the three cases to be described—and the same can be said of those reported by others—are instances of pure corpus callosum tumor, since, as a rule, one or both hemispheres or the central ganglia were considerably involved at one or another point. Perhaps the only symptoms attributable to the injury to the corpus callosum itself are the mental changes, which will be discussed later. In spite of this tendency to the involvement of adjoining portions of the brain, however, these growths show, in certain

*Read before the American Neurological Association, June, 1901.

parts, a distinct predilection for the corpus callosum. This is especially true for the posterior portions of the diseased area in our cases II and III, where the pigmentary discoloration of the tumor sharply defines the outlines of the great commissure.

Case I. The first case was that of a patient who was under the care of Dr. Williams during a portion of her illness, and has been reported by him in the *Boston Med. and Surg. Jour.* for May 16, 1901.

The facts of chief interest were as follows: This patient was a woman, twenty-two years old. Active symptoms lasted about fifteen months, the first complaints being of headaches and vomiting, followed by vertigo and well-marked double optic neuritis. When examined one year later these symptoms had subsided and only obscure anemic signs were found, but the optic neuritis had been followed by a well-marked atrophy. After a number of months of quiescence, active symptoms recommenced, so that she was admitted to the Boston City Hospital. The hospital records read: "The pupils are equal and regular and respond slightly to light. Muscular movements are apparently normal. The patient states that she sees nothing with the left eye, and with the right only objects held to the extreme temporal side. Heart and kidneys are normal. There is no tenderness of extremities, no loss of power in arms and legs and no impairment of sensation." The optic nerve atrophy progressed so that vision was lost in both eyes before she left the hospital. Two weeks later she was admitted to the Carney Hospital in a serious condition. The records say that the left pupil was much dilated and neither responded to light. No perception of light was present in either eye. The right knee-jerk was absent. Sensation was apparently diminished over both legs and body up to the waist line. The muscular sense was impaired, and the sensation seemed to be "delayed in both arms;" but there was much mental dulness which probably accounted for the sensory disturbance. On the following day the pupils were somewhat contracted, but were equal and responded well to light. She died a few days later, but, meantime, optic neuritis was noted in each atrophied disc. Exitus in coma.

The points of special interest in this case were the temporary cessation of symptoms, and the fact that a well-marked optic neuritis developed at a time when optic atrophy had

been for some time complete; and in this respect the case is almost unique. The autopsy, as performed by Dr. Magrath, showed a large tumor lying beneath the corpus callosum and reaching with its apex the optic commissure at the base of the brain. [Figs. I and II.] Serial sections of the hardened brain show that the tumor first appears at about 4 cm. from the anterior extremity of the right frontal lobe, being situated in the very front of the anterior horn of the right lateral ventricle. Here it is pear-shaped, the small end going over the median line to the

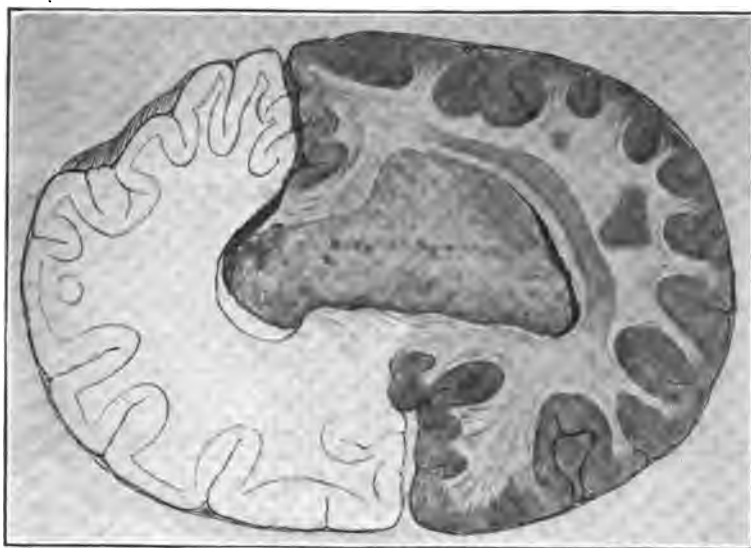


Fig. I. The corpus callosum was here cut through at the autopsy on the left side.

left side, while the large end encroaches on the right hemisphere to within 3 cm. of its external surface. In so doing it occupies the whole of the right lateral ventricle, which has begun at this point. The greatest dimensions of the tumor were: width 6 cm.; depth 5 cm. The third serial section shows the head of the nucleus caudatus present. The cross-section of the tumor is now triangular-shaped, one corner reaching to the base just in front of the optic commissure. At this level the corpus callosum appears as a thin membrane above

the tumor. Each side of the triangle is about 5 cm. long. The median side is shorter than the other two, so that the external corner blocks the right lateral ventricle.

The fifth section [Fig. II] shows the tumor now fairly extending to the base and completely compressing the optic tract. With its apex it actually projects into the interpedun-



Fig. II.

cular space, and in so doing compresses both third nerves, especially the left one.

The sixth section nearly bisects the pons. The tumor appears now only as a grayish mass which here occupies the floor of the right lateral ventricle and is not seen at all in this section on the left side.

Case II. This case was that of a gentleman of fifty, with a good record as regards health and mental vigor, except that he had been somewhat liable to "faint turns," when slightly ill from any cause. Three or four years ago he had fallen to the ground in such an attack, which was brought on perhaps by diarrhea. It may be that these were in fact epileptic attacks, such as have occurred in the early history of other cases of

this same sort. From this point of view they are of marked interest as pointing to the possibility of a very early beginning of the new growth. There was no history of any severe illnesses, or injuries, or of any exposures which would have been likely to cause the final disorder.

He consulted Dr. Putnam on the 5th of August, 1898, and then stated that he had considered himself well up to the middle of June of the same year, when he was taken down with what he called "nervous prostration." He had done business up to June 29th, but his wife stated in response to close inquiry that he had been "rather nervous" for two or three years, and more irritable than formerly. These symptoms had been worse for some months, and had been associated with a vague sense of pressure in the head and eyes, and an unusual inclination to lie down and rest. On one occasion he had had a "numbness" of the right leg, which lasted a day or two and then passed away. This had come on suddenly, but was not attended with loss of consciousness. It also appeared that his mental characteristics had gradually undergone a certain amount of change, of a kind which suggested the possible onset of general paresis. Thus, in June, he had insisted, as a mere whim and against the advice of his carpenter, on having an elaborate bicycle-house put up behind his own residence. His plan of construction for this was poor, the position selected was unsuitable, and he was finally induced to abandon the enterprise in part. His business partner had noticed a falling off in his judgment, and a tendency to hastiness in small matters. Thus, on one occasion, he had rushed off and bought a lot of wheat, without sufficient reason, and on another he had ordered a quantity of coal for his sister, without having been asked to do so, on the plea that it could be bought a little cheaper than usual. For the past six months he had felt no inclination for recreation of any sort. Letter writing had become difficult, and he frequently repeated himself both in speech and on paper, and occasionally left out words. Throughout the spring he had been troubled about sleeping, and, partly on this account, partly because he found it more and more difficult to work, he had been persuaded to go on a trip to the Rangeley Lakes. There he at first improved, but after a few weeks his right hand became paretic and at the same time his speech grew somewhat difficult, although, as on the occasion when the leg became numb, there was no apoplectic seizure. His ability to collect his thoughts had continued to fail, and his mind worked slowly. Both legs had become somewhat weak, but it was the right hand that mainly gave him trouble.

On physical examination he was found to be an intelligent-looking man, though but little inclined to take part in the conversation which went on around him, either with word or expression of the face. His speech was hesitating and stammering in a high degree. He was unable to give the name of the town and country where he had stayed for a long time during the previous month, and made various mistakes in telling the story of his illness. The right hand and right side of the face were paretic; the tongue and lips trembled. The knee-jerks were normal, and the pupils were equal and reacted well to light. The tongue was coated; the bodily temperature normal; the heart's action normal. In spite of the awkwardness of the right hand, he was able to write clearly and fairly well, but omitted letters here and there, a sign which seemed to bear out the notion of a diffuse degeneration of the brain-cortex. Ophthalmoscopic examination failed, at that time, to reveal any sign of optic neuritis.

The patient was not seen again until about two months later, and by that time a marked change had taken place in his condition. He was now suffering from unmistakable signs of brain tumor—headache, nausea, vomiting, optic neuritis—and besides this the speech had become slower and more hesitating, and the difficulty in the use of the right hand had increased. There was also an awkwardness of both legs, so that he toppled over twice in going up stairs. The memory was considerably impaired. The knee-jerks were now exaggerated.

With a view to at least mitigating the effects of pressure, the patient was advised to enter the Massachusetts General Hospital for operation. Here he came under the care of Dr. J. C. Warren, who on November 8th, made a large trephine opening on the left side over the Rolandic area, but without opening the dura, which was, however, found to be very tense. The operation was done under chloroform¹, but in spite of this precaution the shock was so great that for several hours it seemed probable that the patient would die. After the effects of this shock had passed away slight improvement began to show itself, both as regards the general symptoms, the speech, and the use of the limbs.

This improvement did not go very far, however, and after lingering for two months, practically unable to speak or

¹As specially advised by Horsley for cases of operation for increased intracranial pressure. In a case of this sort observed by Dr. Warren and myself the patient, a young girl, died after the use of a very moderate amount of ether and before any incision had been made. Artificial respiration kept the heart beating for five hours, but in vain.

to help himself though not actually paralyzed, and in a condition of considerable mental dulness or apathy but without pain or coma, the patient died.

The autopsy was made by Dr. Magrath, and the brain placed in a formalin solution for preservation. After hardening a number of frontal sections were made, at intervals of 2 cm., with the following result: The tumor appears first at about 4 cm. from the anterior extremity of the left frontal lobe as a blackish mass which lies towards the mesial surface near the anterior extremity of the anterior horn. In the next



Fig. III.

section, about 2 cm. further back, it is of triangular shape, each side being about 6 cm. in length. It lies mainly in the frontal lobe, above the corpus callosum, but invading it in that portion of its course which lies in the left hemisphere from the mesial line outward. [Fig. III.] It also stretches somewhat across the mesial line into the right frontal lobe. The fourth frontal section cuts across the optic commissure. Here the tumor has a bilobular shape, the larger lobe occupying about one-third of the cut surface of the left hemisphere. The right lobe is only about half as large and extends across the corpus callosum well into the right hemisphere. The left lateral ventricle is entirely obliterated at this point and the right ventricle is almost obliterated. The basal ganglia, on both

sides, are very much compressed. The tumor extends to within about 0.6 cm. of the base, where its point comes opposite to the optic commissure. On the 6th section [Fig. IV], which transects the posterior portion of the thalamus, the tumor seems to be confined to the corpus callosum, but with a few outlying portions in adjacent parts of the left hemisphere also. The internal capsule is compressed but not invaded. The last section, which cuts across the posterior horn of the left lateral ventricle, reveals the last traces of the tu-



Fig. IV.

mor, which is thus seen to involve the corpus callosum in its whole length, and to be almost confined to that body in its posterior half.

Sections for microscopical examination were made under the skilful supervision of Dr. E. W. Taylor, to study the question of secondary degeneration in the neighborhood of the tumor and in corresponding areas of the cortex. The method of hardening had been such that the use of the Marchi stain was out of the question, but no gross lesions such as could be shown by Weigert hematoxylin stains were discovered at any point. This was true also of the previous case, No. I.

The tumor itself was of gliomatous character in both cases.

The point of special interest in this case is the early appearance of slight changes in character and slight impairment of mental power and of memory, coming at a time when neither signs of focal lesions nor of general pressure had shown themselves.

The very early occurrence of isolated epileptic seizures several years before is also noteworthy, because, although it is not easy to explain them, the histories of several other cases² report similar incidents.

The paralysis, when it did appear, must evidently have been due to pressure, for which there was abundant cause in the presence of the mass on the left side.

Schupfer, whose observations will be discussed later, thinks that when the tumor is situated anteriorly as regards the corpus callosum the arrangements for the face and arms are more likely to be damaged most; when more posteriorly, those for the legs. The present case would perhaps bear out that view, but it is to be remembered that the relatively fine movements of the hands and of the muscles of speech are more apt to suffer from a given pressure than the movements of the legs. The weakness of the legs in this case, when it did occur, was relatively diffuse, and bilateral in distribution, as in the following case.

Case III was that of a patient under the care of Dr. Samuel Breck³ with whom he was seen in consultation by Dr. Putnam a few days after the onset of his illness. He was a man 56 years old, strongly addicted to liquor, but of vigorous health. The first indication that anything was wrong was noticed on November 18th, 1899, when his conduct was seen to be peculiar and he was observed to be very slow in carving at the table. From this time the signs multiplied quickly, and he died on December 8, only about three weeks after the appearance of the first symptoms. On the first examination he was found to show a weakness of movement of the left leg. This soon spread to the left arm, and then to some extent to the right leg, but did not involve the right arm at all, or but little. For several days after the weakness of the legs began he was still able to walk and to empty the bladder

²See table.

³We owe Dr. Breck our thanks for his kind permission to publish this case.

voluntarily, but after the fourth day he was confined to bed and began to suffer with incontinence of urine and feces.

The mental disturbances, which had begun with dulness and odd behavior, became more and more marked, though his downward course in this respect was broken by relatively clear intervals.

At times he would seem delirious, and would talk about his wife, who had been dead for many years, as if she was present. For the last ten days he was unable to feed himself, but would chew and swallow anything put into his mouth, and would sometimes indicate that he knew what he was eating. Otherwise, he never spoke.

It is important to note that the knee-jerks began early to diminish and finally disappeared, and also that during the few days, when he was still able to walk about, the gait was uncertain and unsteady.

The autopsy was made by Dr. Magrath, and the report here quoted on the position of the tumor was written by Dr. E. W. Taylor, after the specimen had been hardened in 10% formalin solution.

"Frontal sections approximately 1 cm. thick were made throughout the brain with the following result: The tumor first makes its appearance at a distance of about $2\frac{1}{2}$ cm. of the right hemisphere, invading the brain substance and filling the longitudinal fissure at about the level of the corpus callosum and anterior to it. From this point the tumor increases in size toward the posterior part of the brain. The right hemisphere is invaded by the growth, the left not, although somewhat indented by pressure. At about the level of the top of the temporal lobes the tumor has attained its maximum size. Its shape is that of a wedge, its base lying in and involving the corpus callosum, its apex extending to within $1\frac{1}{2}$ cm. of the upper surface of the brain in the longitudinal fissure. The caudate nucleus is not invaded. At a level immediately anterior to the optic chiasm the corpus callosum is almost completely destroyed by the new growth, the corpus striatum is not involved, and the mesial surface of the right hemisphere only to a slight degree. From this point the tumor diminishes rapidly in size, involving the corpus callosum completely and infringing only in the slightest degree on the right hemisphere as before described. The fornix is involved for a part of its course, as it lies opposed to the corpus callosum, otherwise no structures of importance are invaded. The tumor does not extend behind a section through the anterior portion of the thalamus. Neither the lateral nor third ventricles are involved in the growth. The capsules are in-

tact, and there is no very marked evidence of pressure. The greatest size of the growth is about 4 x 4 cm. It is infiltrating, though its extent may easily be made out. There are various discolored areas in the mass of the tumor-necroses."

The report made at the time of the autopsy says that the left half of the tumor was soft and in places hemorrhagic, but not broken down; the right (larger) half had broken down into a gelatinous mass containing much old blood pigment.

The microscopic examination of the fresh specimen showed many round cells, mostly fatty, free fat, old blood-pigment and granular debris.

This case affords a striking example of latency, with eventually rapid outburst of symptoms. Even here, however, the damage to the brain-mechanism revealed itself first through disturbed mental action. In this case, too, both legs and one arm are said to have become weak or awkward without any great involvement of the other arm. Presumably, as in case II, the involvement of the legs came from pressure on the paracentral lobule. This extreme latency of symptoms has been noted in several cases of this class, as occasionally, of course, with tumors in other localities, perhaps especially the frontal lobes. In Zingerle's case, the time during which symptoms were present covered only seven weeks. Obviously, it is the rapid growth of the tumor or increase in its size through hemorrhage, or edema of the brain due to the involvement of vessels, that underlies this rapid development of symptoms. But, as regards the mechanism of the collapse itself, it is our belief that it is due in part to psychical causes. In other words, the strong instinct to reorganize and make use of compensation in every conceivably available form, and to maintain the same sort of front as before, even with a failing number of available cerebral reactions, is due to the activity of memory and constructive imagination, which are in a sense independent of the physical life of the brain and are constantly pressing for expression on old lines. When the time comes, however, that this expression is no longer even tolerably possible, the attempt at reorganization is abandoned and collapse rapidly follows.

The tumor itself in this case was almost the counterpart of that in the preceding case (II) but smaller, and involving

the right hemisphere more than the left. In both cases the growths reached forward somewhat beyond the anterior extremity of the corpus callosum and invaded the structures of one or the other frontal lobes, and the question arises whether it may not have been to this fact that the mental disturbances were due.

The study of this group of cases falls naturally into two parts, the one purely clinical or diagnostic, the other physiological and psychological.

The diagnosis of tumors of the corpus callosum has been fruitfully studied by a number of writers, chief among whom are Bristowe, Giese, Ransom, Bruns, Zingerle, Schupfer.

It is unnecessary, in view of the thorough compilations made by these writers, to give other references in this paper, our object being only to indicate the movement of thought and discovery. The aim of the clinical diagnosis, as noted at the beginning of this paper, is not to distinguish tumors confined to the corpus callosum, but rather tumors which develop with that structure as their central point.

The conclusions reached by these various writers agree in essential respects. The usual pressure-signs of tumor are long delayed, and of positive symptoms, the mental disorder is the one of greatest interest. As stated by Ransom, this takes the form of a progressive failure; or of rapidly developing stupor; or of hallucinations, irritability or attacks of excitement if the progress of the case is not too rapid.

The paralysis, when it is present, is usually primarily hemiplegic and of the ordinary type, but becomes eventually more or less diplegic, at least as regards the legs, and this is highly characteristic, though doubtless due to pressure on conducting tracts lying outside the corpus callosum. Convulsions may occur and these too are liable to be bilateral.

On the other hand, the usual "general" or "pressure" symptoms of brain tumor often fail to appear until relatively late, and cranial-nerve paralysees are usually wanting. The tendon reflexes⁴ may become exaggerated, but may be but little changed.

Zingerle calls attention to the frequency of a lack of power

⁴See Case III of this series.

of balance, sometimes amounting to considerable incoördination, to which he gives the term "callosal ataxia;"* and to a lack of motor-initiative, or "poverty of movement" (*Bewegungsarmuth*), both of which symptoms have been described by early writers, though in other terms and with less insistence.

His account recalls the helpless, apathetic way in which patient No. II of this series lay for the last two months of his life, not in pain and not incapable of considerable movement, nor, apparently, of more or less intelligent observation, but almost without a spontaneous sign or motion, except that he would follow about more or less with the eyes.

Schupfer attempts a subdivision of the corpus callosum tumors, and says that a growth at the level of the "knee" may be suspected; (1) when the disorders of motion that appear have been preceded for a considerable period by mental disorders; (2) when the lower facial muscles of one or both sides become paretic, independently or relatively early; (3) when the head turns toward the paralyzed (hemiplegic) side, or, in general, when there is contracture of the neck and head muscles; (4) when the paralysis of the arms is relatively greater than that of the legs; (5) when disorders of gait are present which recall cerebellar ataxia, though when these signs are associated with vomiting and vertigo they are more apt to be due to tumors lying posteriorly, in such a position that they compress or damage the cerebellum.

When the middle portion of the corpus callosum is the seat of the growth, vomiting is, he thinks, often absent or only of occasional occurrence, and the weakness of arms and legs is contemporaneous and at first of slight degree. Tumors lying posteriorly, in the *splenium*, are more apt to cause impairment of motion of the legs before the arms, the face remaining unaffected. In such cases uncertain and reeling gait, such as has been called frontal ataxia, occurs late. In general the symptoms in these cases suggest cerebellar disease, but the optic neuritis is of

*This is the sign referred to by Zingerle, and called by Bruns "frontal lobe" ataxia. Giese considers that these ataxias are really of cerebellar origin.

less rapid development. The mental symptoms occur either contemporaneously with the paralyses or later. Visual disorders (occipital) would be likely to occur, but have not been noted, and might sometimes be masked by those dependent on the neuritis. So, too, the mental disturbances would, he believes, often mask an ataxia which Redlich thinks might be expected as a result of tumors of the splenium.

In order to base our clinical conclusions on the greatest available number of facts, we have prepared a summary of all admissible cases hitherto published, amounting to 38^a.

An analysis of this table justifies the following statements as fairly though not absolutely reliable.

The whole number of cases in the table is thirty-eight, but in about twelve of these the growth was mainly, though by no means absolutely, confined to the corpus callosum, and these twelve have been analysed apart from the rest for the purpose of comparison.

Both groups show the marked prevalence of mental changes and, in general, their early occurrence. Thus, of the thirty-eight cases, mental changes of one or another kind occurred very early in thirty-four at least; while of the smaller group of twelve selected cases some sort of change of character or mental disorder was present in all but two. Schupfer (*l.c.*) gives an interesting discussion of this tendency, and makes out that of the twenty-five cases collected by him some sort of mental change was universally present, sooner or later. In contrasting these cases with those of tumors in other parts of the brain, he cites the authority of Giannelli, who found mental disorders, with tumors of the frontal lobes in 81% of a large number of reported cases; with tumors of the parietal lobes in 50%; of the temporo-sphenoidal lobes in 66%; of the occipital lobes in 60%; with diffuse neoplasms in 59%; with tumors of the basal ganglia in 50%. The significance of these facts, as bearing on the general subject of the cerebral functions, will be discussed later.

Alongside of the mental changes, the "physical inertia,"

^aErb reports a case of hemorrhage into the corpus callosum, which is reported in our list but not included in the summary and analysis.

or lack of physical initiative, deserves mention, since, although referred by Zingerle to diminution in number or force of centripetal impulses, it might be due as well to mental lethargy or anesthesia.

At all events, it is a symptom on which future inquirers must pass judgment, since it was only positively referred to as present in nine out of the thirty-eight cases, and in one of the selected twelve cases. Paralysis of the limbs, of hemiplegic distribution, though not always involving arm and leg with equal severity, was present in fourteen of the thirty-eight cases, and in four of the selected cases. Bilateral paralysis, which is the far more significant sign, was present in nine out of the thirty-eight cases, but in only one of the twelve selected cases where the tumor was mainly confined to the corpus callosum. This is not remarkable, since the paralysis, whether unilateral or bilateral, is doubtless an affair of involvement of the hemispheres. In two cases the face was paralyzed alone, and in one the tongue was reported immovable. In another case the face was not paralyzed, but was the seat of twitchings on the left side, and the head was drawn round to the right. In all these cases the tumor lay anteriorly, and the localizing rule given by Schupfer is thus in a measure confirmed, although, as might be expected, the tumors lying posteriorly may cause a paralysis of the face together with the limbs. The term "paralysis" does not adequately indicate the motor disorders observable in these cases. "Weakness" and helplessness (compare remarks on incoördination) were common signs, and have been noticeable as regards the legs. So too "rigidity" or contracture, either with or without obvious paralysis, is occasionally noted, and in one case, where no paralysis, strictly speaking, was observable, the patient could not raise the legs from the bed while in a recumbent position.

As regards the *character* of the early mental changes, it is noteworthy, to begin with, that no positive line is to be drawn between the cases where the tumor lay relatively anteriorly and those where it lay rather in the median or posterior portion of the great commissure, though, in fact, the an-

terior portion seems to have been involved more frequently than the posterior in those cases where the tumor was mainly confined to the callosal tracts. As a rule, impairment of memory, dulness, and intellectual failure were the marked features, but many times changes are reported which strongly suggest paresis—as foolish or irrational behavior, irritability and indifference.

Where alterations of the emotional tendencies were present these were far oftener of excitative than of depressive character, and outbreaks of violence and even maniacal excitement now and then occurred, perhaps supervening on more chronic forms of degeneration. Ransom, writing in 1895, says: "In all the slowly-developed cases excitability was marked, maniacal outbreaks being common." In the summary he speaks of "Gradual but marked mental change, in the more acute cases taking the form of increasing stupor, in the more chronic appearing as insanity, with delusions, irritability and maniacal outbursts."

There is no explanation, at present, for this predominance of excitability over depression. At all events, the relative frequency of these emotional states is perhaps much the same for these tumor cases as for cases of "general paresis," which they so often simulate. Perhaps the most striking fact of all is that mental changes of all kinds may remain so long absent, or may even not occur except as practically premortal symptoms. Examples of such cases are those reported by Gläser, and those like our third case and Miss Blackwell's and various others, where the final symptoms even though largely mental were of but brief duration. Here, too, belongs a reference to the oft-cited cases of congenital absence of the corpus callosum unattended by distinct symptoms, and to the experiments upon dogs, showing that at the least motor paralysis need not result from longitudinal section of the commissure.

These facts are to be stored up, not as proving that the corpus callosum fulfils no useful function, but as indications of the rich resources of the brain in the way of compensation. The experiments of R. Ewald are here to be borne in mind,

which indicate that the remarkably rapid, and sometimes almost instantaneous recovery from the effects of localized cortical ablations implies the integrity of the coördinating apparatus of the auditory labyrinth, and fails to occur if the latter has been damaged.

It is also to be remembered that in the daily routine of life few persons are tested according to the highest standards. Most individuals of the age at which these tumors usually cause symptoms are doing work of a sort far inferior to that which might have been expected of them if their brains had ever been trained to their best accomplishment, and generally inferior to that which they have done in the past. Their machinery is damaged, and the fact would be patent if they were put to a severe test. It is in these two facts, the immense fertility of resource of the brain in the line of compensation, and the relatively slight test of efficiency which is usually applied, coupled with the third fact, so often misappreciated, that memories are not "stored in the brain," but remain independent, and press for materialization and expression, if only *some* machinery for even passably adequate expression can be found, that the explanation for the latency of symptoms due to partial or even complete destruction of the corpus callosum is to be sought.

Equally interesting with the latency of symptoms is the fact that *apparently* isolated indications of the presence of these tumors may show themselves long before the case fully declares itself. Thus, in our case II and in the cases reported by Ransom, and by Devic and Paviot, isolated epileptic seizures had occurred several years before the final outbreak. Again, in Miss Blackwell's case, the patient's history previous to the final and brief illness, only five weeks in duration, had been marked by several short attacks of mental derangement, to which, it should of course be said, some hereditary tendency was present. It is needless to say that these facts are open to another explanation than that of the presence of the callosal disease, and that even if due to that cause the mode of production of the symptoms in question would probably be usually classified as either reflex or nutritional.

This latter remark applies likewise to the epilepsies, contractures, tremors and other irritative motor symptoms which

occasionally occur in later stages, provided that opportunity for direct pressure is absent.

General tumor symptoms, that is, headache, nausea and vomiting, occurred early in 17 cases of the larger group, and late in 5 cases. In 5 cases these symptoms were altogether wanting. Of the smaller group of selected cases the general symptoms appeared early in seven. It is worth noting that the knee-jerk is occasionally diminished, although perhaps this tendency is not so marked as Ransom thought it to be. *Convulsions* without very definite characteristics were present in 16 cases out of the 38, and in 6 out of the selected 12.

Optic neuritis was noted as present in 15 cases and absent in 7 cases of the larger group; present in 4 cases and absent in 2 cases of the smaller group. In the rest of the cases the sign was not referred to.

The condition of the pupils is too variable to be of special interest.

Other *cranial nerve* complications are usually lacking, for obvious reasons, but the situation of the tumors in several cases (see cases I and II) is sometimes such, on the other hand, that the nerves of the base, and especially the optic chiasma are subjected to direct pressure.

The interesting fact, illustrated by case I, that even after atrophy due to this pressure, an optic neuritis may occur associated with other "general" signs of cerebral tumor, is of striking interest.

The clinical course of these cases is important mainly from its occasionally striking brevity, as is shown by the following table:

	Whole 38 cases	12 selected cases
Under 1 month.....	7	3
1 to 2 months.....	3	0
2 to 3 months.....	5	1
3 to 4 months.....	2	2
About 1 year.....	5	1
1 to 2 years.....	1	2
2 to 5 years.....	2	1
About 15 years.....	1	0
Doubtful.....	12	2
	38	12

Finally, it would be germane to inquire whether the analysis of this larger body of cases bears out the newer diagnostic inferences of Zingerle and of Schupfer, the former of whom laid stress on the importance of a sort of ataxia of gait, suggesting the cerebellar reel, and of a marked physical inertia, the latter on the possibilities of differentiation of tumors situated relatively towards the anterior, the middle and the posterior portion of the corpus callosum, respectively, by the diagnostic points cited above.

Our attitude on these questions is that the cases that have been carefully studied with special reference to these points are as yet too few to justify an opinion, but that future examples should be thoroughly observed in these respects.

ANATOMY AND PHYSIOLOGY.

A good summary of what is known on the anatomy and physiology of the corpus callosum is given in Schäfer's excellent discussion on the cerebral cortex, in his *Text-book of Physiology*, published in 1900. It should be said, however, that the reliability of the important observations by Mott and the author himself which are cited in the work mentioned as also in every publication on this subject, has been rendered doubtful by the recent experiments of Lo Monaco, to which reference is not there made.

Mott and Schäfer had, namely, found that excitation by electricity, either of the upper surface of the corpus callosum or of the surface exposed by longitudinal section, induced definite movements of the trunk and limbs, etc., varying with the position of the electrodes. Lo Monaco, on the other hand, finds the corpus callosum inexcitable by electricity, though his experiments were done by what is claimed to have been a superior method.

Leaving this question undecided, it is at present undisputed that longitudinal section of the corpus callosum produces, in dogs, no paralysis, and no easily apparent change in the disposition or intelligence, and further, that although the corpus callosum is a true commissural tract, yet the neurone-processes which pass there do not connect strictly symmetrical areas of the two hemispheres, but scatter as they proceed.

This observation is significant, because if it is true it becomes clear that we cannot assume that the existence of the corpus callosum implies a simultaneous, or "twin" action of homologous areas of the brain-cortex of the two sides.

The very latest investigation with regard to this point, that is, with relation to the course of neurone-processes which connect the two sides of the brain, as indicated by degeneration-experiments, is recorded by E. Lindon Mellus of Johns Hopkins, in a paper published in the recent issue of the Johns Hopkins Bulletin. This observer, working by the Marchi method, finds that the degenerating fibers running from limited areas of the cortex, can be traced far more widely than has hitherto been demonstrated.

Reference can not here be made to the great number of highly interesting details given in this paper, which prove how purely relative is the significance of cortical localizations made through the use of electricity. Suffice it to say that as a result of the removal of pieces of cortex one centimeter in diameter from the "hand-center" of the Rolandic convolutions, signs of degeneration were found over a considerable portion of the corpus callosum. It is also noteworthy "that distribution of association fibers to the convolutions of the two hemispheres is very nearly equal and quite symmetrical."

Inspection of the writer's diagrams shows that the cortex over more than the whole "motor" area is involved. The distribution of the degeneration "extends also upon the internal (mesial) surface of both hemispheres as far as the callosomarginal fissure."

It has been generally believed that the corpus callosum does not carry neurone-processes destined for the internal capsule and peduncle of the opposite hemisphere, though it is held by Ferrier and Turner as well as by Zingerle that it is a pathway for corticopetal fibers from the thalamus.

Schupfer, in his excellent paper, discusses several fine points of anatomy relating to the corpus callosum, and shows that the tapetum is not to be reckoned as a part of this commissure, but these questions we cannot now take up.

The tumor described by him invaded a portion of the thalamus, and it is to this fact, he thinks, that several of the most striking symptoms were due.

The fact that the corpus callosum is not necessary for the performance of the grosser functions of the brain-life is shown not only through experiments on animals, but also through the oft-cited cases where it was congenitally absent, and through those observed respectively by Erb and by Kaufmann, where no very definite symptoms attended its partial destruction through hemorrhage or softening.

No one would be tempted to assume, however, in spite of these observations, that this great commissure exists for nothing, and they stand as one challenge the more for us to find out what part it does subserve, and in what manner its absence is ordinarily made good.

To do this with positiveness may be impossible, but we can not even begin to understand such a question without adopting more clarified views than are now current as to the fundamental nature of the part played by the brain in the economy of the conscious life.

Although it may be true that the typical psychoses are at present best studied, as is often maintained, not from the standpoint of psychology but as clinical entities, that is not the case here where a typical course is not in question. So long as we cling to the vague, crude, and misleading idea that the brain is, in any proper sense, the repository of the mental functions, so that, for example, the cortex is rightly to be spoken of as a store-house of memories, we shall remain at sea in the analysis of mental disorders related to definite brain-injuries such as are to be dealt with in these cases.

Two comparatively recent books are of prime importance in this connection, the one by Loeb, on the physiology of the brain, the other by the psychologist Bergson, on the nature of memory in its relation to the physical world, so to speak, of which the brain is strictly a part. Loeb's observations make it strikingly clear that the functions of the nervous system, including the brain, can profitably be studied as representing only the marvelous working out of modes of reaction

already inherent in all living protoplasm. Bergson's work, although not experimental, but speculative and analytic, goes, in its own path, far deeper, and shows, by a process of reasoning of extraordinary subtlety, that the brain would occupy no privileged position over any other portion of the nervous system or indeed of the whole physical universe, in respect to the mind, were it not for the fundamental fact that it represents a mechanism capable of responding to a given stimulus, not always in the same way, but in any one of numerous different ways, and even in these different ways all at once, if the nascent responses, most of which come to nothing, are taken into account.

Memory, which is the primal and fundamental mental function, linking together the past and the future, and clothing perception with all that gives it color and value, is in a certain sense independent of the brain, though it would, of course, never exist but for the fact that the brain responds in the way it does, and cannot come practically and definitely to the service of the individual except through the intervention of brain-activity.

The brain, then, is to be studied solely as a piece of machinery, and the greater part of the disorders of memory due to defects in its operation are broadly classifiable under one of two heads, according to whether the lesion is one that affects the general vitality of the brain as a whole (toxic and nutritive disorders), or is a local destruction of brain elements.

In the former case no special memory may be lost, but the relations of all of them to the outward life of the individual will be less firm, and a veritable "rupture of the mental equilibrium" (impairment of sense of identity, etc.) may result. In the latter case the mental equilibrium may not be broken, but the memory will lose something of its complexity. The individual may present the same *sort* of front towards the world, mentally speaking, as before, and will strive to effect a reorganization of his functions on the old lines, but he will be like a person trying to work with less good tools than before, or to do without some special tools; and from this strange results may ensue.

The recent work upon the functions of the frontal lobes as compared with the rest of the brain, is interesting in this connection. Thus, for example, Bianchi's reasoning, while it confirms the doctrine that mental disturbances pre-eminently attend frontal-lobe disorders, yet assigns to this portion of the brain no specific functions, but only that of gathering together again the same sensori-motor mechanisms which have already been utilized for simpler purposes, and combining them for new ends, at once more comprehensive and more specific.

One might, perhaps, use the simile that by the aid of the frontal-lobes we think and act relatively on the basis of symbols which condense many details into a brief expression, just as the mathematician condenses a mass of figures for more convenient use by the aid of the differential calculus. It is not however, to be assumed that it is in the frontal lobes alone that this kind of mental operation goes on, but only that without them it cannot readily go on. Again, the very recent investigations of Tonnini on the comparative effects on the mental functions of removing the cortex of different parts of the brain, show that this operation is followed by closely similar results, no matter whether done on the frontal lobes or on other portions, but that a relatively small removal of cortex from the frontal lobe is equivalent to a large removal elsewhere. It is not, therefore, necessary to assume that the mental disorders which attend the development of tumors of the corpus callosum imply always an interruption between the two frontal lobes, or a cutting off of one frontal lobe from its normal connections with the rest of the brain, though such lesions as these might be pre-eminently effective. Neither can one expect to explain, on anatomical grounds, why hallucinations and excitement are characteristic of one case, dementia of another. And yet it is certainly instructive to be reminded that the conditions under which these various symptom-groups occur are of very varied sorts.

Tonnini's experiments bear out the observations of Goltz that removal of the occipital lobes is to a considerable extent equivalent in its results to removal of the frontal lobes. In

all these cases, the individual strives with force to reestablish an equilibrium which will answer the same purpose with the old one even though less efficiently. Only there comes a time when this is no longer possible, and this moment arrives especially soon in the case of toxic or nutritive disorders, by which the functions of the whole brain are more or less impaired, even though but slightly,⁷ instead of there being simply a reduction in the number of available elements and connections.

One observation of Goltz, cited by Loeb, is especially interesting in connection with the subject of commissural disease. He found, namely, that removal of the anterior portions of both hemispheres caused more dementia than that of a much larger part of one hemisphere, even to the whole hemisphere. Loeb suggests, as a possible explanation, that since the mechanisms of the two hemispheres more or less duplicate each other, one set might be spared without causing so great a disruption of the sense of personality as would follow the loss of the same parts of both sets, and thus a removal of structures that cannot be duplicated.

It should be said here that in spite of the very high value of Loeb's physiological work his psychological deductions with regard to "associative memory," which he makes the basis of consciousness, are by no means free from flaw.

Finally, the recent anatomical studies of v. Monakow should be called to mind, especially as a counterpart to those of Mellus, from which it appears that Flechsig's views are not well grounded when he draws a sharp distinction between the projection-tract areas of the cortex and the association centers, based on the time of formation of the myelin. The situation is far more complex than this, and it is probable that well-defined differences in function between different cortical areas, in Flechsig's sense, do not exist.

If this doctrine is correct, which recognises in the brain only a series of sensori-motor mechanisms, a multitude of threads stretched from periphery to periphery, and as devoid of the power of the storage of memories; and if it is true that there is no exclusively "intellectual" center, then the prob-

⁷Compare Bergson.

lem as to how it happens that tumors of the corpus callosum are so prone to cause symptoms of mental defect becomes easier of solution. We do not need to enquire why such lesions do not cause disorders of motion, disorders of cerebral reflexes, because this is just what they do effect, though these losses are in a measure made good by compensation. The sole function of the brain consists either in bringing about actual motion or nascent motions. It exists for nothing else; and mental life consists in clothing these actions, which seem to be concerned only with the needs of the present and the future, with the colors and forms drawn from the life of the past. Into each act of the present the whole of the actor's past enters in some measure.

Mental disease means the failure on the part of these cerebral reflexes to recur in such a form that the memories of the past can insert themselves in the manner consistent with what had been their previous wont.

But if the "storage of memories" is not a function of the cortex, then it is not a function of the nerve-cell, and in that case the doctrine becomes more reasonable that sees in the neurone an organ of transmission alone.

The following tables contain the records of thirty-eight cases of tumor implicating the corpus callosum.

SYMPTOMS	GLÄSER NO. I	GLÄSER NO. II	GLÄSER NO. III	KÖSTER NO. I	KÖSTER NO. II	BRUNS NO. I
Age and sex	Male 72	Woman, 30	Woman, 60	Male, 69	Male, 68	Male, 77
Mental condition in early stages	Intellect clear No complaints made	Memory weak	Intelligence much disturbed Insomnia	Intelligence apparently normal	Loss of memory. Hallucinations of sight and taste	Decreased intelligence. Loss of memory. Irritable
Mental condition in late stages	Remained the same. No impairment of intellect.	Intellect clear	Hallucinations Delirium Coma	Increased mental dulness, then apathy and mania	Great disturbance of the intelligence, then stupidity and coma	On admission to hospital insane and wild. Later lassitude and apathy. Coma
Speech	Not noted	Slightly affected and difficult	Not noted	Irrational at first	Not noted	Not noted
Physical inertia	Not noted	Not noted	Not noted	Not noted	Not noted	Not noted
Convulsions	Not noted	First general and then left side only. Head turns to right	Not noted	Not noted	Not noted	No epileptic attacks
Incoordination	None	Not noted	Not noted	When standing tends to fall backwards	Walking and standing became more difficult	Walking became difficult. Often dragged the right foot.
Paresis or Paralysis	Weakness of the left leg greater than the right. No paresis	Paralysis of left extremities and face muscles	At first weakness in right leg, then paralysis in right arm, face and leg.	Rigidity of muscles only. No evident paretic tendencies	Cannot raise legs while lying in bed. No evident paresis	Contracture and paralysis of the right arm and leg. No paralysis of face

Cutaneous Sensibility	Normal	Not noted	Not noted	Somewhat decreased on body and arms, but can localize well	Not noted	Abolished on right side of body
Knee-jerk	Stiffness in both knees. Right knee-jerk normal	Not noted	Not noted	Decreased	Absent	Normal
Optic Neuritis	Not noted	Not noted	Present (?)	Present	Present	None
Vomiting	Not noted	Not noted	Present	Not noted	Present	None
Dizziness	Not noted	Not noted	Not noted	Not noted	Present	None
Headache	Not noted	Present	Present	Not noted	Present	Present
Appearance of general symptoms	Not noted	Not noted	Yes	Not noted	Yes	Yes
Condition of pupils	Not noted	Pupils equal and moderately dilated during convulsions	Not noted	Both pupils much contracted	Pupils react to light	Pupils equal and contracted
Cranial Nerves	Not noted	Conjugate deviation of eyes to the right during convulsions.	Not noted	Strabismus divergens	Not noted	Not noted
Mode of death	Not noted	Very sudden.	In coma	In coma	In coma	In coma
Duration of symptoms	About 1 month	Not noted	Not noted	Not noted	Not noted	About 6 months
Remarks						Increasing bodily weakness. Vol. evacuations

SYMPTOMS	BRUNS NO. II.	BRUNS NO. III.	PONTOPPIDAN	ERB	ZALESKI	RANSOM
Age and sex	Male, 49	Male, 60		Male, 61	Male, 60	Woman, 24
Mental condition in early stages	Loss of memory. Irritable, insomnia and a feeling of fatigue	Mental apathy. Sat still many hours at a time	Not noted	Hemorrhage into Corp. Callos. Very slight affection of the intelligence	Mental weakness	Irritable and very excitable. Semimanic
Mental condition in late stages	Mental dulness	Great mental dullness	Not noted	The same	Somnolence and apathy	Intelligence intact. Restlessness subsided under treatment
Speech	Somewhat affected	Would not reply to questions but apparently understood.	Not noted	Unaffected	Not noted	Normal
Physical inertia	Not noted	Present	Not noted	Not noted	None	Not noted
Convulsions	Just before death fell down suddenly unconscious	No epileptic attack	Daily epileptic attacks	No tremor	Not noted	Epileptic attacks quite frequent
Incoordination	Not noted	Ataxia. Takes one step forward and then one back	Not noted	No ataxia	Slight ataxia	At times a slight tendency to stagger to left, otherwise gait was steady
Paresis or Paralysis	Paralysis of both arms and legs came suddenly and late during convulsion	Sl. Paresis of facialis with the exception of frontal branch. Tongue lay immovable	Monospasmus triachialis. Monoclonic posture	None	Stiffness of all the extremities and "lock" muscles. Slight paresis of right eye and right hand	Doubtful paresis of left angle of mouth, elsewhere none. Head and eyes turn to left

Cutaneous Sensibility	At first normal. Abolished during convulsion	Much decreased	Not noted	Normal	Normal	Lost on legs only, otherwise normal
Knee-jerk	Normal	Normal	Not noted	Absent (probably due to meningitis). Other reflexes were normal	Increased	Normal. Double ankle clonus
Optic Neuritis	No examination	None	Not noted	Not noted	Not noted	Present
Vomiting	Present (late)	None		Present (late)		Present
Dizziness	Present (early)	Not noted		Present		Not noted
Headache	None	None		Present		Present
Appearance of general symptoms	early late	Not noted		Yes	Yes	Yes
Condition of pupils	Left pupil larger than right	Equal at first. Good reaction to light. Later L. larger than R.	Rise of temperature at end, otherwise no general symptoms	Pupils dilated and do not react. At death pupils were equal in size	Pupils react well to accommodation but not to light	At first normal. At one time after epileptic attack both pupils dilated and of equal size
Cranial Nerves	Normal	Not noted		Normal	Not noted	Normal
Mode of death	During attack of convulsions	Oedema of lungs		Cerebro-spinal meningitis subac.	Not noted	Not known, but very sudden
Duration of symptoms	About 3 months	About 5 weeks		About 3 weeks	About 3 weeks	About 2 years

SYMPTOMS	DEVIC & PAVIOT	KNAPP NO. 1	KNAPP NO. II	GIESE	GREENLESS	M'GUIRE
Age and sex	Male, 46	Male, 42	Male, 58	Male, 53	Male, 68	Male, 31
Mental condition in early stages	Loss of memory and lessened power of attention. Irritable	Falling memory, delirium and violence	Loss of memory and mental power	Loss of memory	Loss of memory and delirium. Takes no notice of things happening about him	Hebétude and dementia characteristic of syphilis
Mental condition in late stages	Early and severe dementia. Somnolence	Not noted	Delirium with mental confusion, dementia and coma	At first wanted to walk and work. Later had no such desire. Depressed and elevated alternately. Apathy and coma	Progressive dementia. Typhoidal state. Coma	Coma
Speech	Normal	Not noted	Not noted	Speech slow, difficult and uncertain	Incoherent	Not noted
Physical Inertia	Not noted	Not noted	Not noted	Not noted	Not noted	Not noted
Convulsions	Epileptic attacks beginning six or seven years before other symptoms	General tremor with temporary helplessness	Epileptiform attacks with vertigo	Epileptic attacks. General weakness with great decreased muscular force in legs	General clonic convulsions. "Quivering fits" affecting arms and legs. Paraplegia	General Convulsions
Incoordination	Not noted	Staggers probably from weakness in knees	Inability to walk	Present	Staggers. Cannot stand alone	None
Paresis or Paralysis	During convulsions eyes turn up and to the left. Left hemiplegia in especially in legs. Slight contracture of left arm and some in right leg	General impairment of the muscular power	Impairment of strength of left leg. At first no paresis of face muscles. Later paralysis of left arm, face, leg and tongue	Tongue deviates to right. Tremor of face muscles in speaking, paralysis of arms and legs increased	None	Left facial paralysis. Deviation of tongue to left

Cutaneous Sensibility	Normal	Normal	Numbness and pricking feeling in hands	Normal	Not noted	Normal
Knee-jerk	Normal	Normal	At first normal. Later increased after hemiplegia	Increased	Not noted	Somewhat increased
Optic Neuritis	Vision is good	None	None	Present (slight)	Not noted	None
Vomiting	Not noted	Present	Not noted	Present	Present (late)	Nausea (late)
Dizziness	None	Not noted	Present (first symptom)	Present	Not noted	Not noted
Headache	Not noted	Present	Present	Present	None	Present
Appearance of general symptoms	Not noted	Yes	Yes	Yes	Yes	Yes
Condition of pupils	At first pupils were normal, then dilated and finally contracted	Pupils dilated and react to light	Not noted	Right pupil larger than left. Reacted slowly	At first were normal with reaction. Later reaction was sluggish	Normal
Cranial Nerves	Normal	Slight impairment of nerves of right eye	Not noted	Normal	Normal	Normal
Mode of death	Exhaustion	Not noted	In coma	In coma	Exhaustion	In convulsion
Duration of symptoms	About 11 years	3 months	1 month	About 9 months	Probably 5 years	1 year
Remarks	Incontinence of urine		Involuntary evacuations of urine and feces		General weakness	

SYMPTOMS	BRISTOWE NO. I	BRISTOWE NO. II	BRISTOWE NO. III	BRISTOWE NO. IV	BERKLEY	FRANCIS & STARR
Age and sex	Male, 46	Male, 41	Male, 51	Woman, 25	Male, 45	Woman, 45
Mental condition in early stages	Intelligence impaired. Stupidity	Mental dulness	On entrance to hospital drowsy. Drowsiness and stupidity	Occasional optic hallucinations. Otherwise intelligent	Monomania. Very loquacious. Intelligence unimpaired	Sluggish. Apathy
Mental condition in late stages	Drowsiness and coma	Stupidity and apathy	Drowsiness increased	Emotional and joyous, then drowsiness and coma	No coma	Not noted
Speech	Did not speak; probably on account of drowsiness	At first little affected. Later aphasia	At first slow and pertinent. Later aphasia	Drawing and distinct	Unimpaired	During attacks speaks slowly and very seldom
Physical inertia	Present	Present	Present	Present	Not noted	Not noted
Convulsions	No epileptic attacks	No epileptic attacks	None	None	Not noted	Attacks of unconsciousness every few weeks, not epileptic
Incoordination	Cannot walk or even stand alone	None	None	On standing tends to fall backwards	None	None
Paresis or Paralysis	Progressive paralysis of right arm and leg. Doubtful paresis of one or both sides of face. No paresis of tongue	Complete hemiplegia of right side. Involvement of tongue and face muscles	Progressive paralysis of left arm and leg. Some rigidity. Doubtful paresis of left side of face and tongue.	Paral. of left arm and leg with rigidity. Weakness of left side of face and tongue.	None	Occasional twitching of left face. Great tendency to turn head to right (late)
Cutaneous Sensibility	Not noted	Normal. Later a slight hemianesthesia	Not noted	Not noted	Normal	Not noted

Knee-jerk	Not noted	Normal and at last right knee-jerk was increased	Not noted	Not noted	Normal	Normal
Optic Neuritis	Defective vision (?)	Present	None	Falling vision	Vision normal	Present (late)
Vomiting	Nausea	None	None	Present	None	Present
Dizziness	Present	Not noted	Not noted	Present	Not noted	None
Headache	Present	Present	Not noted	Present	None	Present
Appearance of general symptoms	Not noted	Not noted	Not noted	Yes	Not noted	Yes
Condition of pupils	Pupils normal. Left eyelid did not close as perfectly as right one.	At first contracted and equal. At death left pupil larger than right	Normal	Pupils equal but no reaction to light and accommodation	Not noted	Right pupil dilated, no reaction in either pupil
Cranial Nerves	Normal	Hearing imperfect on the right side.	Normal	Hearing and taste normal. Decreased sense of smell (?)	Normal	Slight strabismus convergens of right eye
Mode of death	Exhaustion	Exhaustion	Not noted	Not noted	Pulmonary edema	Exhaustion
Duration of symptoms	14 weeks	10 weeks	About 12 weeks	16 months	22 days. Probably lasted several years	9-12 months
Remarks	Involuntary evacuations	Involuntary evacuations	Involuntary evacuations	Involuntary evacuations		Great general weakness

In all 4 cases there was a tendency to have food remain indefinitely in mouth.

SYMPTOMS	LUTZENBERGER	SEGLAS & LONDE	OLIVER	LABBÉ	PASTURAUD	SCHUPFER
Age and sex	Male, 34	Not noted	Woman, 43	Male, 37	Woman, 56	Woman, 74
Mental condition in early stages	Loss of memory. Irritability	Hallucinations of sight and hearing. Self accusation. Delirium	Hallucinations. Very emotional. Sensory illusions	Loss of memory. Sad and apathetic	Whimsical or slightly foolish. Mental quiescence	Acute mental disturbance. Psycho-motor agitation
Mental condition in late stages	Coma	Typhoidal and later meningeal state	Sluggish. Hebetude and coma	Light stupor	Apathy. Increased after entrance into hospital	Not noted
Speech	Affected	Not noted	Normal	Speaks slowly and very seldom	Normal	Not noted
Physical inertia	Not noted	Not noted	Not noted	Not noted	Not noted	Not noted
Convulsions	Not noted	Not noted	Not noted	Epileptic attacks	Not noted	Clonic convulsions of right arm and leg.
Incoordination	On standing tends to fall backward	Not noted	None	None	Not noted	Not noted
Paresis or Paralysis	None, even after apoplectic attack	Weakness and stiffness at first of left arm and leg, then later right arm and leg	None	None	Head turned to the right	Paresis and contracture of right arm and leg. Facial muscles normal
Cutaneous sensibility	Not noted	Not noted	Normal	Normal	Hyperesthesia	General analgesia (?)
Knee-jerk	Absent	Increased	Not noted	Normal	Not noted	Increased and later diminished

Optic Neuritis	Falling Vision	No general symptoms	No general symptoms	No examination	No examination	No examination
Vomiting				None	Not noted	Present
Dizziness				None	Present	Not noted
Headache				Not noted	Present	Not noted
Appearance of general symptoms				Yes	Early	Not noted
Condition of pupils				Left pupil larger than right. No reaction in left. Sluggish in right.	Not noted	Normal
Cranial Nerves	Hearing somewhat affected			Smell much affected. Taste and hearing somewhat affected	Not noted	Normal
Mode of death	Exhaustion			Exhaustion	Exhaustion	Progressive exhaustion
Duration of symptoms	1 1-2 months	3 weeks		Not noted	16 days	3 to 4 months
Remarks	Apoplectic attack quite early			About 3 1-2 years. The symptoms indicated a dis-ease of the base of brain		

SYMPTOMS	D'ALLOCO	PICK NO. I	PICK NO. II	ZINGERLE	SINKLER	BLACKWOOD
Age and sex	Male, 63	Male, 27	Male, 77	Male, 50	Male, 50	Male, 56
Mental condition in early stages	General and mental weakness	Dulness and apathy	Progressive mental weakness	Slight alteration of character. Drowsiness, then rapid onset of mental and physical failure	Silent and morose. Loss of sexual desire. Neurasthenia and hyperchondriacal.	Diminished intelligence. Poor memory. Vague fears
Mental condition in late stages	Not noted	Not noted	Not noted	Confusion. Finally stupor and coma. 10 days' duration	Dementia. Indifferent and indifferent. Apathy. Coma with stertorous breathing	Drowsiness with gradually increasing coma
Speech	Disarthria. Anacels aphasia	Not noted	Disturbed	At first unaffected. Later impairment of articulation	Unaffected	Not noted
Physical Inertia	Not noted	Not noted	Not noted	Present	Present	Not noted
Convulsions	Not noted	General convulsions	General convulsions	None	None	None
Incoordination	Not noted	Present	Not noted	Disturbance of equilibrium	Not noted	"Lurching gait"
Paresis or Paralysis	Progressive paralysis of right arm and leg. Paresis of left arm, leg and tongue	Paralysis and contracture of right facial muscles. Head turned to right. Paresis of left face with deviation of tongue. Weakness of arms and legs	Paresis of left arm	Widespread but slight paresis of both sides, especially the right side	None	Tremulousness of lips and limbs. Great feebleness. No paralysis

Cutaneous sensibility	Hemianesthesia of right side	Normal	Normal	Absent	Normal	Not noted
Knee-jerk	Absent	Increased	Not noted	Increased especially left. Hy-per-tonicity of muscles of ex-tremities	Increased	Not noted
Optic Neuritis	Present	Present	None	Present	Present	Apparently absent (Not noted)
Vomiting	Present (late)	Present	None	Not noted	None	
Dizziness	Not noted	Not noted	Not noted	Not noted	None	
Headache	Present	Present	None	Not noted	None	
Appearance of general symptoms	Yes	Yes	Not noted	Yes	Yes	
Condition of pupils	Not noted	Not noted	Not noted	Pupils equal and reacted slowly to light	Pupils contracted and acted sluggishly. P. (R) G.	Normal
Cranial Nerves	Slight Ptosis	Diplopia Intermittent	Normal	Normal	Normal	In coma
Mode of death	General progression of symptoms	Not noted	Pneumonia	In coma	In coma	5 weeks
Duration of symptoms	6 weeks	Not noted	17 months	9 weeks	8 months	
Remarks						

SYMPTOMS	PUTNAM NO. I	PUTNAM NO. II	WILLIAMS
Age and sex	Male, 50	Male, 56	Woman, 22
Mental condition in early stages	Lack of mental balance suggesting paresis	Peculiar behavior followed soon by delirium with intervals of clearness	Intellect clear
Mental condition in late stages	Impairment of verbal expression. Failure of memory. Apathy and mental dulness	Coma	Mental apathy and coma
Speech	Awkward and imperfect	Unaffected	Unaffected
Physical inertia	Present	Present (late)	None
Convulsions	Two years before other symptoms, as epileptiform convulsions. None later	None	None
Incoordination	Disturbed equilibrium. Ataxia indicated but doubtful (Not typical)	Gait uncertain and unsteady	Slight staggering (early symp)
Paresis or Paralysis	Paresis of right hand and right side of face with disturbance of speech. Later weakness of legs	Paresis of left leg right leg (not right arm)	None
Cutaneous Sensibility	Temporary paresthesia of right leg coming suddenly and very early	Not noted	Not affected at first. Value of later examination impaired by mental condition
Knee-jerk	At first normal. Later both exaggerated	Diminished and finally abolished	Right knee-jerk absent. Left knee-jerk normal
Optic Neuritis	Present (late)	Not noted	Present
Vomiting	Present	None	Present
Dizziness	Present	None	Present
Headache	Present	None	Present
Appearance of general symptoms	early late Yes	Yes	Yes
Condition of pupils	Normal	Not noted	Left pupil temporarily dilated. No reaction in either pupil
Cranial Nerves	Normal	Normal	Normal
Mode of death	Gradual failure	In coma	In coma
Duration of symptoms	About 1 year	3 weeks	15 months
Remarks			

SYMPTOMS	BRISTOWE NO. I	BRISTOWE NO. II	BRISTOWE NO. III	BRISTOWE NO. IV	GLÄSER NO. I	GLÄSER NO. II
Anterior portion	Present	Present	Present	Present	Present	Present
Middle portion			Present	Present		Present
Posterior portion			Yes		Yes	Present
Origin apparently in Corp. Callos.	Yes					Whole of right side destroyed
Origin outside but involving Corp. Callos.				Corpus Striatum and Thalamus Opticus		Right Hemisphere and pressing especially on anterior portion of Corp. Callos.
Tumor confined almost to Corp. Callos.	Yes				Yes	
Neighboring parts of brain involved	Slight involvement of Centrum Ovale chiefly on left side	Centrum Ovale chiefly left side. Left 2d and 3d frontal convolutions. Left ascending parietal convolutions	Anterior thirds of Fornix extending into right hemisphere	Distension of right ventricle and displacement of Fornix and Septum Lucidum	Very slight invasion into both hemispheres	Chief part of tumor in the covering of 3d and right lateral ventricles and also in right hemisphere
Size of tumor	Small	Small	Small	Large	Medium	Large
Microscopical Diagnosis	No exact microscopical diagnosis made. Probably all Sarcomata.					
Remarks	In first three cases tumor arose obviously in Corp. Callos. and extended symmetrically along radiating fibers of Corp. Callos. into white matter of Hemispheres					
						Left posterior Cornu much dilated. On left side tumor ends also in covering to lateral ventricle

	GLÄSER NO. III	GIESE	BERKLEY	BRUNS NO. I	BRUNS NO. II	BRUNS NO. III
Anterior portion			Present	Present	Present	Present
Middle portion				Present	Present	
Posterior portion	Present	Present		Yes	Yes	
Origin apparently in Corp. Callos.		Yes	Yes			In first Frontal convolution
Origin outside but involving Corp. Callos. Tumor confined almost to Corp. Callos.			Yes	Yes		
Neighboring parts of brain involved		Slight invasion of right Occipital lobe. Posterior portion of tumor joined to P. x and Tentorium. Left Corpus Quad. slightly flattened and softened	A few apparently sclerotic fibers passed to Centrum Ovale	Invasion of right side into Pre-cuneus. On left side into white substance on Hemisphere of Lateral Ventricle	On both sides. Behind it includes Fornix posterior and goes in to posterior horns of both Lateral Ventricles, also Pre-cuneus on both sides	Pressure on first Frontal convolution and Gyri Fornicatus. Second tumor in knee of Corp. Callos. Third tumor, small over Nucleus Caudatus
Size of tumor	Medium	Small	Small	Medium	Large	Small
Microscopical Diagnosis		Glio-Sarcoma				
Remarks		Edge of Gyri Fornicatus free on both sides	Tumor situated in middle line in Corp. Callos.		Fornix and Cornu Ammonis remained free	There were three very small tumors situated very close together in region of anterior portion of Corp. Callos.

SYMPTOMS	ZALESKI	KÖSTER NO. I	KÖSTER NO. II	FRANCIS & STARR	LUTZENBERGER	OLIVER
Anterior portion		Present		Present		Present
Middle portion		Present	Present		Present	
Posterior portion	Present	Present	Present			
Origin apparent - Yes ly in Corp. Callos.		Yes	Yes	Yes	Yes	Yes
Origin outside but involving Corp. Callos.						
Tumor confined - Yes almost to Corp. Callos.						Yes
Neighboring parts of brain involved	Slight invasion in- to white sub- stance of left hemisphere	Invasion to Cen- trum semiova- te on side. Beneath Invasion Septum pelucidum, For- nice and upper part of Corp. Callos. remained free	Includes entire Spiculum and part of Fornix lying beneath it. On left side in- vasion into white substance of Hemisphere above Lateral Ventricle. No sharp border	Both Frontal lobes much in- vaded	Invasion of cortex and left hemis- phere. Also into edge of Gyrus Supra - Margi- nalis	No gross lesion of other parts of brain. Left op- tic nerve com- pressed
Size of tumor	Medium	Large	Large	Large	Large	Small
Microscopical Diagnosis	Glioma	Sarcoma	Glioma	Neuro-Glioma	Glioma	Sarcoma
Remarks		Both Ventricles distended with fluid				

SYMPTOMS	D'ALLOCO	PICK NO. I	PICK NO. II	SCHUPFER	PASTURAUD	LABBÉ
Anterior portion	Present	Present			Present	Present
Middle portion	Present	Present	Present			
Posterior portion	Present			Present		
Origin apparently in Corp. Callos.		Yes	Yes	Yes		
Origin outside Left hemisphere but involving Corp. Callos. Tumor confined almost to Corp. Callos.					In fissure between Left and right Frontal lobes connected by a bridge	
Neighboring Right Frontal lobe, whole of left internal Capsule, left Hemisphere		Cavity in posterior Cornu and the posterior portion of anterior Cornu of the right side	Fornix involved	Cornu Ammonis and Splenium Pulvinar	Left Frontal lobes	All three Frontal lobes more involved than the right ones
Size of tumor	Large	Medium	Small	Small	Small	Large
Microscopical Diagnosis	Not noted	Sarcoma	Glio-Sarcoma	Not noted	Sarcoma	Glioma
Remarks			Hydromyelia			

SYMPTOMS	M'GUIRE	GREENLESS	PONTOPPIDAN	ERR, HEM. C. C.	RANSOM	DEVIC & PAVIOT
Anterior portion	Present	Present	Present (?)	Present	Present	Present
Middle portion						
Posterior portion						
Origin apparently in Corp. Callos.	Yes	Yes	Yes	Present Present Present Yes	Yes	Yes
Origin outside but involving Corp. Callos.				Present Present Present Yes	Yes	Yes
Tumor confined almost to Corp. Callos.			Yes	Present Present Present Yes	Yes	Yes
Neighboring parts of brain involved	Had made an excavation in the Fornix. Both Hemispheres involved more on the left side. Slight excavation in Cortex above on the left side	Fully one-third of the tumor was anterior to the Corp. Callos. In left Frontal lobe involving white matter	Left Hemisphere involved	The lateral, 3d and 4th Ventricles all filled with blood. Cortex engorged with blood and pulpy, as were also the Great Ganglia, Pons, and Cerebellum.	Tumor bulged very slightly into each ventricle, otherwise brain healthy	Invasion of the right Hemisphere up to its superior border, also the Centrum Ovale, Right Frontal lobes. Tumor does not extend outside of Corp. Callos. on the left side
Size of tumor	Small	Small	Small	Large	Small	Large
Microscopical Diagnosis		Glio-Sarcoma	Glio-Sarcoma	Hemorrhage into Corp. Callos.	Sarcoma	Glioma
Remarks	Tumor was very small 3.5x2 centimeters	Cerebrum, otherwise quite normal		Neighboring parts of brain are hardly involved by hemorrhages		

SYMPTOMS	KNAPP NO. I				KNAPP NO. II				ZINGERLE		SINKLER		BLACKWOOD		PUTNAM NO. I	
	Anterior portion	Middle portion	Posterior portion	Origin apparently in Corp. Callos.	Yes	Present	Present	Yes	Present	Present	Present	Present	Present	Present	Present	Present
Origin outside but involving Corp. Callos.	Present	Present	Present	Yes	Yes	Present	Present	Yes	Present	Present	Present	Present	Present	Present	Present	Present
Tumor confined almost to Corp. Callos.	Present	Present	Present	Yes	Yes	Present	Present	Yes	Present	Present	Present	Present	Present	Present	Present	Present
Origin outside but involving Corp. Callos.	Present	Present	Present	Yes	Yes	Present	Present	Yes	Present	Present	Present	Present	Present	Present	Present	Present
Tumor confined almost to Corp. Callos.	Present	Present	Present	Yes	Yes	Present	Present	Yes	Present	Present	Present	Present	Present	Present	Present	Present
Neighboring parts of brain involved	Present	Present	Present	Yes	Yes	Present	Present	Yes	Present	Present	Present	Present	Present	Present	Present	Present
Size of tumor	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large	Large
Microscopical Diagnosis	Glioma	Glioma	Glioma	Glioma	Glioma	Glioma	Glioma	Glioma	Glioma	Glioma	Glioma	Glioma	Glioma	Glioma	Glioma	Glioma
Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks	Remarks

Extends into the right Frontal lobe. Both Lateral Ventricles were almost filled and both Hemispheres invaded. The Basal Ganglia were compressed. The Internal Capsule is compressed but not invaded

A mass the size of a pigeon's egg on either side above the Lateral Ventricles and partly including them. Basal Ganglia not involved

Extends into the anterior horn and roof of the left Lateral Ventricle; also right Frontal lobe and extreme tip of right Caudate Nucleus, and above this it includes the roof of the right Lateral Ventricle

Extension into Septum Pellucidum, into both side Ventricles and especially on the right side the tumor invades the right forceps and extends back into the third ventricle. Both Corp. Quad. flattened, especially the right

Flattening of the convolutions of both hemispheres. Posterior half and the pillars of the fornix involved. Also the right Gyrus Hippocampus. Extension into the right hemisphere one centimeter into the left one-half centimeter

Flattening of convolutions in both hemispheres. Corpus Striatum and Basal Ganglia flattened. A hemorrhage was present posterior to the tumor in the right hemisphere

Large Carcinoma (?) Small fibrotic tumor mass also found in the posterior portion of the left Centrum Semi-Ovale

Medium Sarcoma A few dorsal fibers of the Corp. Callos. remained intact

Medium Sarcoma Both Lateral Ventricles dilated. Basal Ganglia not compressed

Large Glioma

SYMPTOMS	PUTNAM NO. II	WILLIAMS
Anterior portion	Present	Present
Middle portion	Present	Present
Posterior portion	Present	Present
Origin apparently in Corp. Callos.		Yes
Origin outside but involving Corp. Callos.	In the right hemisphere	Possible origin in the region of the Lamina Terminalis
Tumor confined almost to Corp. Callos.		
Neighboring parts of brain involved	The right Hemisphere involved to within 1-2 centimeters of its upper surface. Left Hemisphere not invaded. The tumor has a maximal size at level anterior to optic chiasm. The Fornix is involved in part as it lies opposed to Corp. Callos.	Both Lateral Ventricles almost obliterated. A small mass extends down into the Interpeduncular space and compresses the second and third nerves
Size of tumor	Medium	Large
Microscopical Diagnosis		Glioma
Remarks	Neither the Lateral nor third Ventricles are involved.	Some increase in intraventricular fluid.

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Periscope.

CLINICAL NEUROLOGY.

DES CRISES GASTRIQUES TABÉTIQUES (Tabetic Gastric Crises). Dr. Mathieu (Revue de Thérapeutique, June 1, 1900).

The history of the differentiation of gastric crises from ordinary digestive disturbances is given *in extenso*, and the author enumerates the five different varieties of these crises which were defined by Charcot. The two last of these five groups include those in which the crises occur daily, and those in which the attacks are prolonged. The author considers that those cases in which the duration of the crisis is lengthened are associated with the employment of morphia. The pain is soothed by the use of the hypodermic syringe, but when the patient is not under the influence of morphine he becomes morbidly anxious about the return of the crisis, and by brooding over each individual symptom, he ends by provoking a renewed attack. This is, the author thinks, the great drawback to the use of morphine; it tends to make the attacks not only longer, but more frequent. And yet there is no other means at once so easily employed and so effective against the terrible attacks which are known as gastric crises. Another interesting point concerning gastric crises relates to the latent character of the general symptoms during the continuance of the crises. It may be that the disease itself makes little or no progress while the gastric crises are acute and frequent. Cases are quoted by the author in which locomotor ataxia has been present for twenty years, and during this long period no other symptoms beyond the gastric have ever appeared. It would seem to be that it is the same with the gastric crises as with the eye symptoms; for it is well known that in cases of tabes in which early optic atrophy and resulting blindness are present the general symptoms are frequently very mild, and sometimes are entirely in abeyance. It is necessary, further, that in dealing with periodical, long-continued, and obstinate "bilious attacks," the possibility of locomotor ataxia being behind the symptoms be borne in mind, and in all such cases a careful examination of the knee-jerks, of sensation, and of the eyes should be made.

JELLIFFE.

IL TRAUMA NELLA PATOGENESI DELLA SYRINGOMYELIA (Trauma in the Pathogenesis of Syringomyelia). V. Cito (Gi' Incurabili, March 15, 1900).

The author gives a summary account of the identification as a substantive disease of syringomyelia, from which it appears that the name was first used in 1820 by Ollivier d'Anger. Many cases are brought forward in which the symptoms arose in connection with or soon after injuries to the spinal column. In support of the view that trauma has much to do with the production of the symptoms of syringomyelia is the fact that it occurs particularly in those who are exposed to accidents and injuries—in males of adult age and in those who live by bodily labor. Further, cases are recorded in which, as a result of fracture of the cervical vertebrae, cavities resembling those found in syringomyelia are developed in the spinal cord. It may be.

of course, that the trauma causes a hematomyelia, and that the syringomyelia follows as a result of the absorption of the blood-clot; or, again, a defective development may be associated with trauma in causing the appearance of syringomyelia. JELLIFFE.

EIGHT CASES OF GOITER IN ONE FAMILY. Samuel Amberg (Maryland Medical Journal, Vol. xlv, 1901, March, p. 93).

The history of this family is as follows: Florence C., a white girl, seven years of age, was brought to the Johns Hopkins Dispensary complaining of a cold. On examination of the somewhat anemic child a slight enlargement of the lymph glands over the body and a slight arrhythmia of the heart action were found. Besides this, there was an enlargement of both lobes and the isthmus of the thyroid gland. Of the family history the following notes were taken: there is no tuberculosis, lues, rheumatism, nervous disease or insanity in the ascendants. The family of the father is free from goiter. The paternal grandparents of the mother came from England, from what part is not known. The father of the mother was born in Newark, N. J., and died in Baltimore sixteen years ago from typhoid fever. Whether he or his parents were afflicted with goiter could not be found out. Two daughters of his second marriage were free from it. The maternal grandmother of the mother was born and raised in Baltimore. One of her parents came from Wales; she was free from goiter. Neither was her husband afflicted. The mother of the mother was born and raised in Baltimore. She died twenty-seven years ago with smallpox. It is not known whether she had an enlargement of the thyroid gland. She had two sisters, one of whom died in infancy, the other is living and has a goiter. This sister had nine children; seven died young, and of the two living girls, twenty and twenty-eight years of age, neither is afflicted with goiter. The large goiter of the sister decreased after the birth of her last child, and can now, it is said, hardly be noticed. The mother is thirty-one years of age; was born and raised in Baltimore. She had two brothers who died in infancy. She states that her goiter was noticed when she was about seven years old. The tumor involves both lobes, but the left lobe appears larger. It is about the size of a fist and soft. Her goiter used to swell during pregnancy. Of her eight children, one boy, four months of age, died two years ago. The youngest child, a girl of ten months, is the only one in whom the thyroid gland appears not to be enlarged. The gland of the next child, a girl four years of age, is distinctly enlarged, particularly the right lobe. A little more pronounced is the swelling of the gland of the five-year-old boy, and here, too, the right lobe is larger than the left. In the seven-year-old girl the swelling betrays itself very distinctly to the eye. Both lobes appear equally affected. Then follows a boy, not quite ten years old, whose gland does not quite reach the size of that of his sister, while the right lobe appears to be larger. The enlargement in the eleven-year-old girl exceeds a little that of her younger sister, and both lobes are about equally affected, while in the oldest child, a girl twelve years of age, the swelling of the left lobe is more pronounced. Here the tumor reaches about the size of an egg. The seven-year-old girl is a rather delicate child, while all the other children are well built and well nourished. All of them, except the four-year-old girl, were slow in learning to talk. The two boys and the seven-year-old girl show defective articulation, for which a satisfactory explanation could so far not be made out. The oldest girl is somewhat anemic. She and her next sister become like all the members of the

mother's family, the mother included, easily excited. Then the face flushes, and they get palpitation of the heart. The heart-sounds of the mother and children are clear. The mother has a "goiter-voice;" she takes cold easily, and has then difficulty in breathing, sometimes in swallowing. In none of the cases (mother and children) is any sign of exophthalmic goiter to be found. All the tumors are soft and appear to belong to the so-called struma parenchymatosa seu follicularis, while that of the mother is probably a struma colloidea seu gelatinosa. This form corresponds to the adenoma gelatinosum interacinosum of Wölfler, whose classification of struma is clinically not adopted on account of its complexity. The difference between the struma parenchymatosa and gelatinosa is a difference of degree.

JELLIFFE.

UEBER HIRNBLUTUNG BEI VERRUKÖSER ENDOCARDITIS (Cerebral Hemorrhage with Verrucose Endocarditis). M. Simmonds (Deutsche med. Wochenschrift, No. 22, 1901, p. 353).

Seven cases are reported, most of them in children or young persons, in which death occurred from cerebral hemorrhage in association with verrucose endocarditis. Kidney disease or vascular disturbance, other than that causing the hemorrhage, was not present, and no history of syphilis, alcoholism or other intoxication was obtained. The author believes that the cardiac lesion was certainly the cause of the cerebral hemorrhage in some of the cases, and probably the cause in the others. In two of the cases he found the same staphylococci in ruptured aneurysms on small cerebral vessels, as in the endocardial proliferations. He supposes that small particles containing bacteria were carried from the cardiac valves into the cerebral vessels, and produced there aneurysms through the agency of the bacteria.

SPILLER.

PSYCHIATRY.

TETANIE UND PSYCHOSE (Tetany and Psychosis). Luther (Allg. Zeitschrift für Psychiatrie, 1901, lviii. s. 254).

The author, after discussing in a general way the prevailing views with regard to the relation between tetany and psychoses, expresses his agreement with the opinion of Schultze, that tetany may either act as the exciting cause of a psychosis, or the same cause which produces the tetany may also be responsible for the psychosis, that the psychosis is ever the cause of the tetany is improbable. The most natural and probable explanation seems to be that both conditions are due to an intoxication, but as to just what the poison is, cannot yet be decided. He gives the clinical history, and post-mortem findings in the case of a woman of fifty-one which came under his observation. In this woman, contrary to what has been observed in other cases, the spasm did not antedate the mental symptoms, but came on during the course of the disease. In its clinical aspect the case was one of hallucinatory confusion with periods of great excitement, and at times with depression, terminating after about four weeks' course, through exhaustion after severe gastric symptoms. The autopsy showed a leptomeningitis with atrophy of the convolutions and granular ependyma, besides chronic pneumonia of the bases and small hemorrhages into the mucous membrane of stomach and duodenum. Discussing the relation between clinical symptoms and pathological findings, the author thinks that the case was most

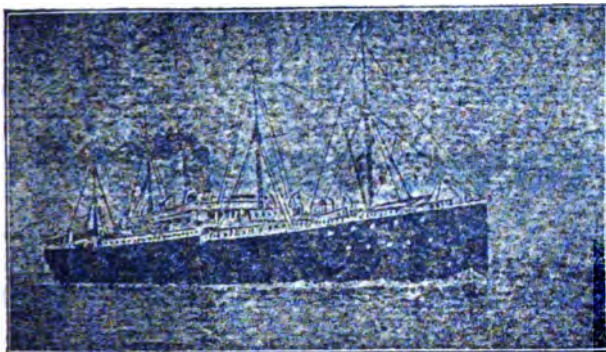
probably an intoxication psychosis, the origin of the poison being in the gastro-intestinal canal, and that the same poison which acting on the brain produced the mental symptoms, also set up the spasm.
ALLEN.

UEBER DIE KLINISCHEN FORMEN DER WOCHENBETTSPSYCHOSEN (The Clinical Forms of Puerperal Insanity). Aschaffenberg (Allg. Zeitschrift für Psychiatrie, 1901, lviii, 2 and 3, s. 337).

The author has analyzed 118 cases of insanity occurring in connection with pregnancy, the puerperium and lactation, which were under treatment at the Heidelberg clinic during nine years. The clinical forms were as follows: Maniacal-depressive insanity 25; dementia præcox 46; and in ten cases an already existing dementia præcox was made much worse; general paresis (beginning) 7 cases; epilepsy 1 case; hysterical delirium 1 case; hallucinatory confusion 6 cases; while in 22 cases an exact diagnosis was impossible on account of the early death or too early departure of the patient. His conclusions are as follows: In Germany, at any rate, there exists no specific puerperal insanity, but all clinical forms may be observed. Any characteristic common to all puerperal cases he failed to observe, the strongly exotic coloring, often insisted upon, being no more frequent than in psychoses due to other causes. In the maniacal-depressive form (circular insanity) hereditary predisposition played an important rôle. Age seemed to exert little influence. In illegitimate pregnancies, anxiety for the future, shame, conflict with the family and bad care may play a rôle, but eliminating several cases not properly belonging to this class, the author found no great difference from the general percentage of illegitimacy for the district. Since there is nothing specific in form or manifestations, we must look upon the function of reproduction as frequently an exciting, but not a predisposing cause of psychoses. In a general way the prognosis of puerperal insanity is not so unfavorable, more than half the cases tending to recover.
ALLEN.

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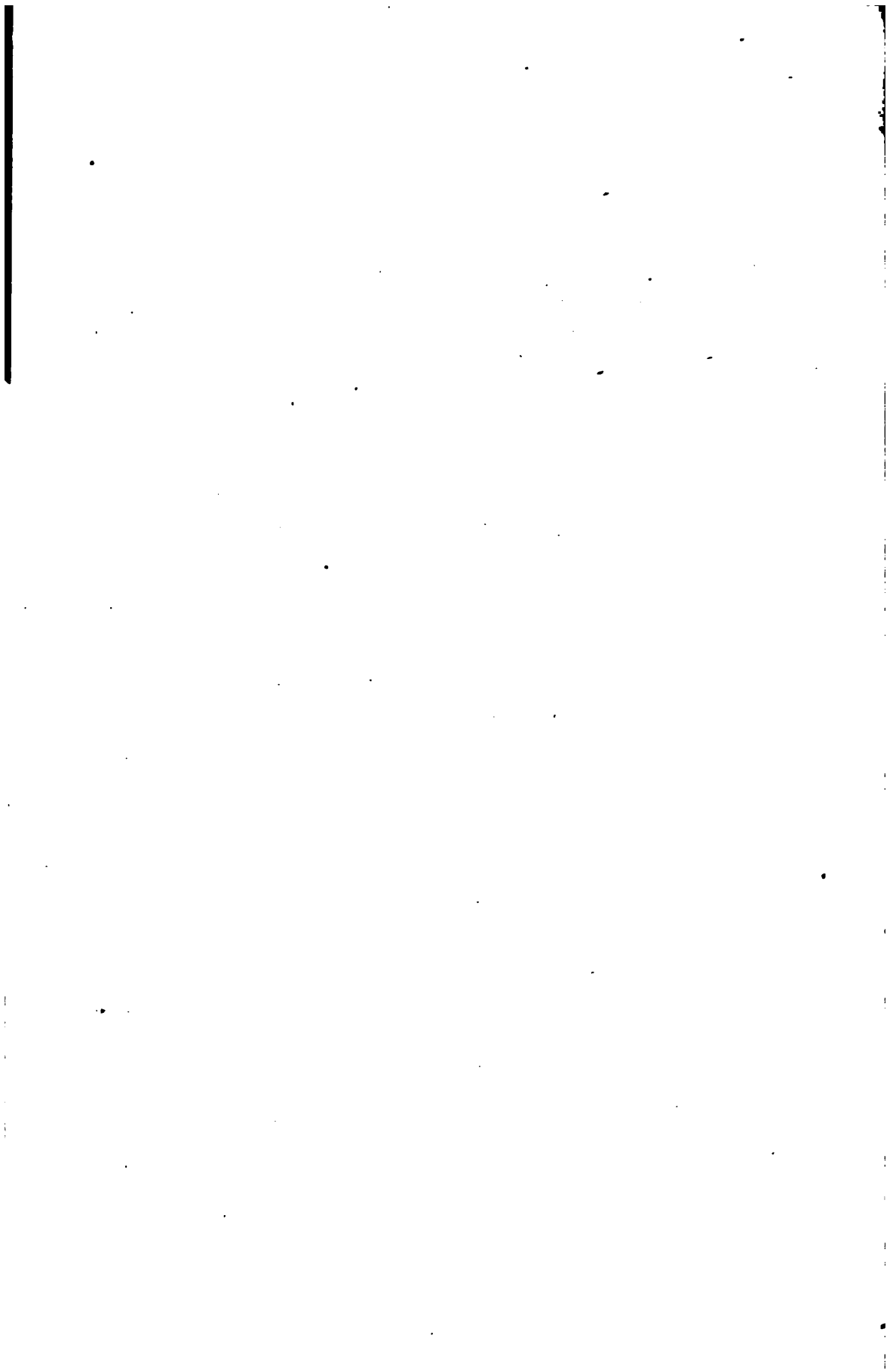
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